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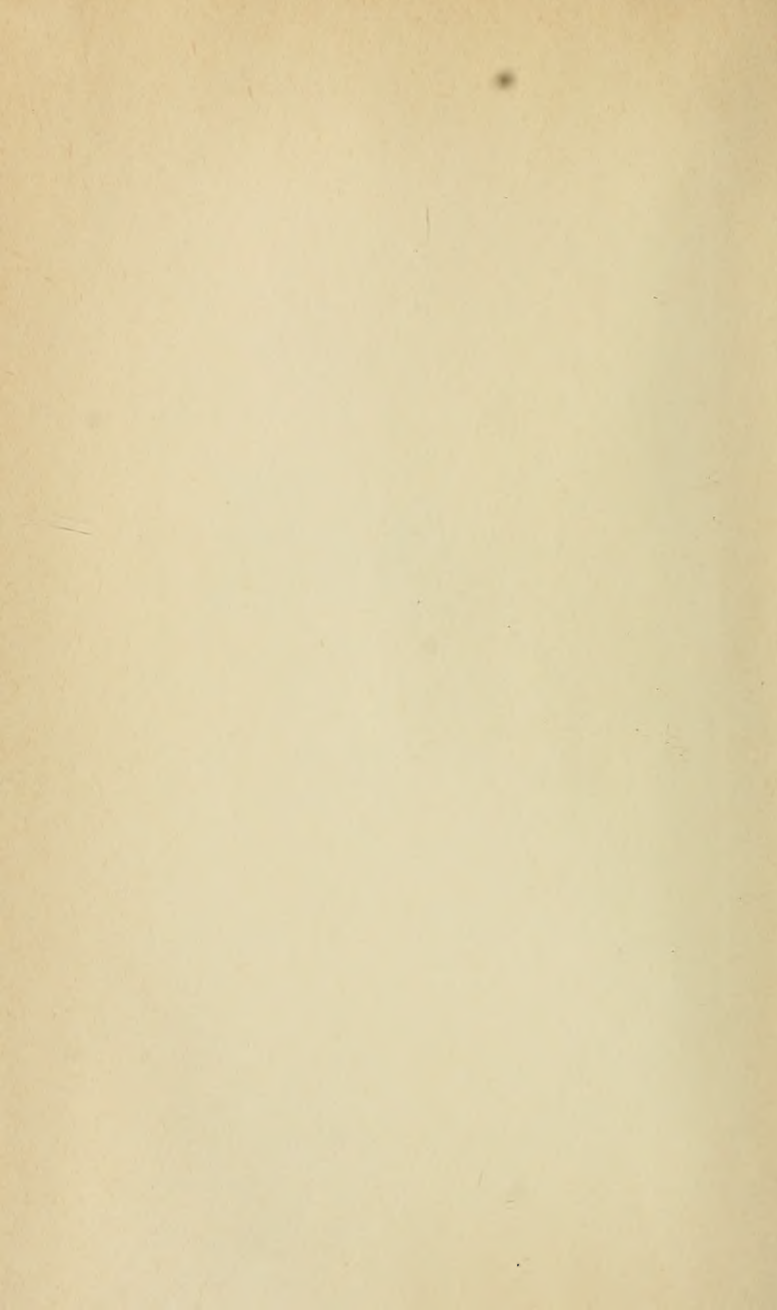
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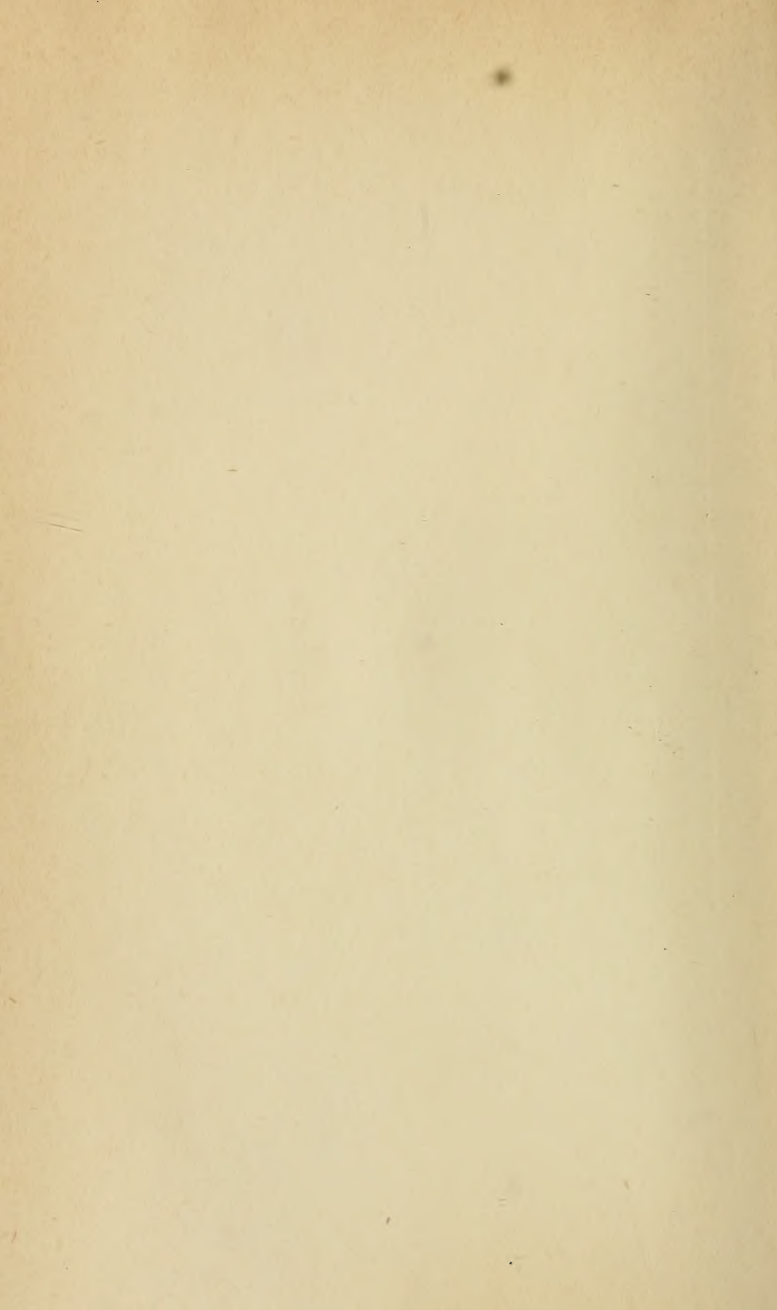
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NATURAL SEP 5 1945
HISTORY





ENGLISH BOTANY.



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ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS.

EDITED BY JOHN T. BOSWELL (FORMERLY SYME), F.L.S. ETC.

LECTURER ON BOTANY AT WESTMINSTER HOSPITAL.

THE POPULAR PORTION BY MRS. LANKESTER,

AUTHOR OF "WILD FLOWERS WORTH NOTICE," "THE BRITISH FERNS," ETC.

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AND

JOHN EDWARD SOWERBY,

ILLUSTRATOR OF THE "FERNS OF GREAT BRITAIN," "GRASSES OF GREAT BRITAIN,"

"WILD FLOWERS WORTH NOTICE," ETC. ETC.

Third Edition.

ENLARGED, RE-ARRANGED ACCORDING TO THE NATURAL ORDERS,

AND ENTIRELY REVISED.

WITH DESCRIPTIONS OF ALL THE SPECIES BY THE EDITOR.

VOLUME III.

LEGUMINIFERÆ TO ROSACEÆ.

LONDON:

GEORGE BELL & SONS, YORK STREET, COVENT GARDEN;
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1876.

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ENGLISH BOTANY.

SUB-CLASS III.

POLYPETALÆ CALYCIFLORÆ.

Calyx free or more or less adhering to the ovary. Sepals generally more or less united. Petals in 1 or 2 whorls, unlike the sepals, or in 2 or more whorls, passing gradually into sepals, inserted on the calyx (perigynous) or on the torus (hypogynous), separate, rarely united, sometimes absent. Stamens definite or indefinite, inserted on the calyx (perigynous), or, when the ovary is inferior, appearing to spring from the superior margin of the latter (epigynous). Ovary superior, half inferior, or wholly inferior.

ORDER XXV.—LEGUMINIFERÆ.

Herbs, shrubs, or trees, with alternate compound or decom-pound leaves, of which, however, the leaflets are sometimes reduced to 1. Stipules usually conspicuous, free, or more or less united at the base to the petiole or to each other. Flowers irregular or regular, variously coloured, sometimes solitary but more commonly in racemes, spikes, heads, or panicles, the inflorescence being sometimes axillary and sometimes terminal. Sepals 5, united together into a 5-cleft or 5-toothed calyx, with the segments often unequal in size or degree of cohesion to each other, the odd one inferior or turned away from the axis of the inflorescence. Petals 5, sometimes fewer or entirely absent by abortion, most commonly unequal, but sometimes equal, distinct or variously cohering together, the odd petal superior. Stamens definite (often 10, more rarely 5) or

indefinite, monadelphous, diadelphous, or distinct, rarely triadelphous. Ovary simple, solitary, 1-celled, free from the calyx. Ovules several or solitary, amphitropous or rarely anatropous. Style forming a prolongation of the upper or ventral suture. Stigma simple. Fruit a legume, very rarely a drupe; 1-celled or more or less imperfectly 2-celled by the inflexion of one or both sutures, or divided transversely by spurious dissepiments, generally opening at both the upper and lower sutures, but sometimes only at one of them, or indehiscent. Seeds several or solitary. Albumen none. Embryo with the radicle bent along the edge of the cotyledons. Cotyledons thick and fleshy or thin and foliaceous.

SUB-ORDER I.—PAPILIONACEÆ.

Herbs (which are sometimes twining or climbing), undershrubs, shrubs, or more rarely trees, with simply pinnate or trifoliate, more rarely digitate or unifoliate leaves. Leaflets most commonly entire on the margins, but sometimes finely toothed. Flowers irregular, perfect. Calyx commonly persistent, with the sepals united at the base into a tube which is 5-toothed or 5-cleft: sometimes 2-lipped, in which case the upper lip consists of 2 and the lower of 3 sepals; segments more or less distinctly imbricated in æstivation. Corolla papilionaceous, frequently persistent and withering, consisting of 5 petals (of which, however, some or all are occasionally abortive), with imbricated æstivation. Uppermost petal, named the standard or vexillum, exterior to the others, folded and enclosing them in the bud, usually the largest, frequently reflexed when the flowers are expanded; lateral pair of petals, called the wings or alæ, within the standard but exterior to the lowest pair, generally flat or concave, erect or slightly spreading; lowest pair of petals interior to all the others, connivent and generally cohering at their anterior edges, and together forming the keel or carina, sometimes adhering at the base to the wings. Stamens inserted along with the petals at the base of the calyx-tube, 10 (very rarely only 5) in number. Filaments united into a long tube, which is sometimes entire, sometimes longitudinally cleft (monadelphous), or the tube may be formed of 9 stamens, the tenth, which is the uppermost one, separate (diadelphous); very rarely the filaments are entirely free. Anthers 2-lobed. Ovary not adhering to the tube of the calyx

consisting of a single carpel, with the placentæ turned towards the standard. Ovules usually several. Fruit a legume or pod (which, however, assumes very various forms), sessile or stalked within the calyx, generally dry and opening by both sutures, but sometimes 1-seeded or breaking transversely into 1-seeded joints, and indehiscent. Seeds with the funiculus commonly dilated at the point where it is attached to the hilum. Cotyledons after germination sometimes becoming foliaceous: sometimes, although still appearing above ground, remaining thick: or sometimes never emerging from the seed-coat. Radicle close to the hilum, generally curved, lying along the edges of the cotyledons.

To this sub-order belong the whole of the British species of Legumeniferæ.

TRIBE I.—LOTEÆ.

Stamens monadelphous or diadelphous. Pod continuous, not articulated, 1-celled or more rarely more or less perfectly longitudinally 2-celled (by the inflexion of the sutures), dehiscent or indehiscent. Cotyledons changing into green leaves during germination. Stem not climbing or twining. Leaflets usually without stipels.

SUB-TRIBE I.—GENISTEÆ.

Stamens monadelphous. Pod 1-celled. Stem often shrubby. Leaves trifoliate, unifoliate, or digitately pluri-foliate, more rarely without any laminæ.

GENUS I.—ULEX. *Linn.*

Calyx coloured, divided to the base into 2 lips; the upper lip with 2 small teeth at the apex, the lower one with 3. Corolla not much longer than the calyx, with the petals of nearly equal lengths. Standard oblong, emarginate, slightly spreading. Wings spreading. Stamens all united together, with the tube entire. Style filiform, curved upwards at the summit. Stigma capitate. Pod oval-oblong, swollen, about as long as the calyx. Seeds few, with the depressed hilum covered by the dilated funiculus.

Small shrubs, with abortive branches converted into spines. First leaves of young seedlings trifoliate, but all the subsequent ones unifoliate; on mature plants all linear and terminating in a spine (doubtless a petiole without a lamina). Stipules completely

incorporated with the leaves so as to be undistinguishable. Flowers axillary, yellow.

The generic name is said to be derived from *ac*, a point, in Celtic, in reference to the prickly branches.

SPECIES I.—**ULEX EUROPÆUS.** *Linn.*

PLATE CCCXXIII.

Stem sub-erect. Branches spreading or ascending; sparingly hairy. Primary spines straight, ascending, very deeply furrowed. Bracts deltoid-ovate, one-sixth the length of the calyx, and in width twice the breadth of the pedicel. Calyx densely shaggy. Wings longer than the keel, curved over it at the apex. Pod longer than the calyx, matured in the same year which has produced its flower.

Var. *α, vulgaris.*

Branches mostly spreading. Primary spines strong, with many ridges.

Var. *β, strictus.*

Ulex strictus, *Mac. Bab. Man. Brit. Bot. ed. iii. p. 69.*

Branches erect. Primary spines slender, 4-edged.

On heaths, commons, and banks, and in dry fields or outskirts of woods. Very common, and generally distributed; except in the extreme North of Scotland. Var. *β* only in Lord Londonderry's Park, county Down.

England, Scotland, Ireland. Shrub. Winter and Spring.

Stem woody, 3 to 6 feet high, with very numerous stiff branches. Primary spines (abortive branches) 1 to 3 inches long, very deeply furrowed, with prominent ridges between the furrows, except at the spinous subulate tip; secondary spines simple, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, decreasing in size as they approach the apex of the primary spine. Trifoliate leaves only present on the plant immediately after germination on petioles $\frac{1}{8}$ to $\frac{1}{4}$ inch long, with 3 oblanceolate acute hairy leaflets; all the subsequent leaves, which appear to consist entirely of petiole, about $\frac{1}{4}$ inch long, channelled above nearly to the apex, which terminates in a subulate spine. Flowers bright yellow, $\frac{3}{4}$ inch long, on short shaggy pedicels, solitary and in pairs chiefly on the primary spines, or near the base of the secondary spines irregularly racemose or paniculate. Bracts loosely applied to the calyx. Calyx yellowish-olive with blackish hairs, divided on each side to the base, faintly nerved, the upper segment with 2 very indistinct teeth at the apex, the lower one with 3

more evident ones. Wings straight nearly to the apex, where they are folded over; petals of the keel cohering very slightly, and readily separable, with a shaggy strip along their lower margin. Pod $\frac{3}{4}$ inch long, dark brown, nearly black, coarsely punctate, thickly covered with long, shaggy, bristly, fulvous-brown hairs. Seeds olive-brown, ovoid-compressed, with a roundish-oval depression at the hilum. Spines and leaves dark dull green, stem and primary spines rather thinly hairy.

The variety β , which is known by the name of the "Irish Furze," is now acknowledged by Professor Babington to be merely a variety of the common Furze, as it does not always retain its characters when raised from seed.

Common Furze, Gorse, Whin.

French, *Ajonc d'Europe*. German, *Europäischer Gaspeldorn, Heckensame*.

We are told, on good authority, that the Furze is sometimes spelt Furses, and is a name of obscure origin, possibly coming from *fir*, these bushes being, like the coniferous trees, used for firewood or fuel. Our own notion would rather be that the bright yellow flowers, seeming almost flame-like in their brilliancy, suggested the name "fire" or "furze" bush.

The beauty of this attractive but treacherous bush invites unwary travellers to pull its branches, and to regale themselves with the delicious perfume of its blossoms; but they soon find that its prickly stems are an ample protection against those who covet its beauty. A poet observes:—

"And what more noble than the vernal Furze
With golden baskets hung? Approach it not,
For every blossom has a troop of swords
Drawn to defend it."

The Furze is not a very hardy plant, although we constantly see it on open commons and wastes. Severe frosts are very liable to injure it, and during some of our sharp winters, such as that of 1861, whole fields of Furze perished. Linnæus is said to have lamented that he could not keep it alive in Sweden even in a greenhouse. It was one of his favourite plants, and it is related that, when he first visited England and saw it in flower on Hounslow Heath, he fell on his knees and thanked God for having created a plant so beautiful. The same story is also told of Dillenius; so that we may perhaps doubt its authenticity. The Furze is thought to be the *Scorpius* of Theophrastus, and the *Ulex* of Pliny. By botanists before the days of Linnæus it was known as a Broom, and called *Genista spinosa*. Linnæus restored to it the name of *Ulex*, by which it has ever since been recognized. In France, the Gorse or Whin is generally used for burning, for which purpose it is cut down every few years in places where it grows naturally. In Surrey and other counties it is used largely as fuel, especially by bakers in their ovens, and is cultivated for that purpose, and cut down every three years. When burned it yields a quantity of ashes rich in alkali, which are sometimes used for washing, either in the form of a solution or lye, or mixed with clay, and made into balls as a substitute for soap. The ashes form an excellent manure, and it is not uncommon, where the ground is covered with Furze bushes, to burn them down to improve the land, and to secure a

crop of young shoots, which are readily eaten by cattle. In some parts of England it is usual to put the Furze bushes into a mill to crush the thorns, and then to feed horses and cows with the branches. When finely cut or crushed, sheep will readily eat it. As a picturesque hedge, the Furze is very appropriate, and is extremely beautiful when in blossom. In plantations it is frequently sown as a shelter to very young trees on their first planting, also as a cover for game. In calm and sunny weather the crackling of Furze bushes caused by the explosion of their elastic pods is distinctly audible.

“The path with laughing Furze o’errun,
When bursting seed-bells crackle in the sun.”

English poets have not failed to sing the praises of this common plant, whose scent, resembling somewhat that of the heliotrope, perfumes the air for a distance, and whose golden blossoms, often contrasting with the purple blossoms of the heath growing near it, must attract the admiration of every wayfarer. Cowper says :—

“The common, overgrown with fern, and rough
With prickly gorse, that, shapeless and deformed,
And dangerous to the touch, has yet its bloom,
And decks itself with ornaments of gold,
Yields no unpleasing ramble.”

SPECIES II.—*ULEX NANUS*. *Forst.*

PLATES CCCXXIV. CCCXXV.

Stem decumbent. Branches spreading or drooping, shaggy. Primary spines recurved-spreading, faintly furrowed or striate. Bracts roundish-ovate, $\frac{1}{2}$ th as long as the calyx, and in width not exceeding the breadth of the pedicel. Calyx pubescent. Wings about equal to the keel, or very slightly exceeding it. Pod about as long as or shorter than the calyx, matured in the season succeeding that in which its flower was produced.

SUB-SPECIES I.—*Ulex Gallii*. *Planch.*

PLATE CCCXXIV.

Planch. Ann. Bot. ser. iii. Vol. XI. p. 213.

U. nanus, β *Gallii*, *Auct. Plur.*

U. provincialis, *Legall*, Fl. de Morbihan (non *Lois.*).

Branches ascending, nearly straight, or slightly drooping. Primary spines strong, slightly furrowed. Wings rather longer than the keel, curved.

On heaths and downs, local, and chiefly confined to the West of the Island, where it occurs from Somersetshire to Wigtownshire. On the East it is only known to occur in the county of Northumberland.

England, Scotland. Shrub. Autumn.

Stem woody, 2 to 3 feet high, with the branches more fasciculate and the spines shorter than in *U. europæus*, the primary spines being from $\frac{1}{2}$ to $1\frac{1}{2}$ inch long and with secondary spines only at the base, which gives the branches more of the appearance of a bottle-brush with the naked part of the primary spines projecting. The flowers have a more regularly spicate or capitate arrangement, they are also smaller than those of *U. europæus*, about $\frac{1}{2}$ inch long, with the yellow inclining to orange, the calyx less pubescent, the wings shorter; the pod is also shorter, and the season of flowering is different; but the most tangible character lies in the very small adpressed bracts. Branches and edges of the leaves and base of the spines with shaggy brown hairs.

Planchon's Furze.

French, *Ajone de Legall.*

SUB-SPECIES II.—*Ulex eu-nanus*.

PLATE CCCXXV.

U. nanus, *Planch.* l. c. *Boreau*, Fl. du Centre de la Fr. Vol. II. p. 140. *Brebisson*, Fl. de la Normandie, ed. iii. p. 72.

U. nanus, var. *a*, *Auct. Plur.*

Branches procumbent, drooping. Primary spines weak, short, slightly furrowed. Wings shorter than the keel, straight.

On heaths, downs, and commons. Plentiful in the South of England; but as the preceding sub-species has only recently been separated, it is difficult to give the exact distribution. I have seen it growing in Kent, Surrey, Essex, and Hants. The so-called *U. nanus* from the South-west of Scotland is probably *U. Gallii*.

England, Scotland?, Ireland?. Shrub. Autumn.

Very like *U. Gallii*, but smaller and more procumbent, with the spines much shorter, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, but, as in that plant, branched only at the base, and the branches have still more of the bottle-brush appearance. The flowers are smaller, and paler yellow.

Dwarf Furze.

French, *Ajone Nain.*

GENUS II.—*GENISTA*. *Linn.*

Calyx herbaceous or sub-herbaceous, bell-shaped, divided half-way down or more into 2 lips, the upper lip bipartite, the lower 3-toothed or 3-cleft. Corolla much longer than the calyx; standard oblong-oval, erect (not spreading), shorter than or equal to the

wings and keel; keel obtuse, with a saccate impression above the claw, at last reflexed. Stamens monadelphous. Style subulate, curved at the summit. Stigma lateral at the apex of the style on the inside. Pod oblong or linear-oblong, compressed or swollen, exerted. Seeds generally numerous, with the funiculus generally scarcely dilated at the hilum.

Small shrubs, with or without spines. Leaves commonly unifoliate, or more rarely trifoliate, with small or inconspicuous stipules. Flowers yellow, terminal and axillary; solitary, or more commonly in spike-like racemes.

The derivation of the name of this genus is variously given. One writer says it comes from *genu*, the knee, in allusion to the angular or jointed appearance of its twigs; another, that it is derived from the Celtic word *gen*, a small bush.

SPECIES I.—*GENISTA ANGLICA*. *Linn.*

PLATE CCCXXVI.

Stems shrubby, branched; branches erect or ascending, wiry, glabrous, spinous. Leaves glabrous, unifoliate: those of the young shoots oval or elliptical, those upon the spines elliptical-linear. Stipules obsolete. Flowers axillary, arranged so as to form lax racemes. Calyx glabrous, with broadly triangular teeth, entirely persistent. Corolla glabrous. Pod ovoid, turgid, glabrous.

On heaths and commons. Rather frequent and generally distributed, but not extending so far North as Orkney.

England, Scotland. Shrub. Spring and early Summer.

Rootstock woody. Stems 6 inches to 2 feet high, rather slender, spinous and leafless below in old plants, the branches densely leafy, the younger and flowering ones without spines, the older portions with slender spines from $\frac{1}{2}$ to 1 inch long. Leaves shortly stalked, somewhat leathery, $\frac{1}{8}$ to $\frac{1}{2}$ inch long, elliptical; but those on the spines or abortive lateral branches much narrower. Pedicels scarcely so long as the calyx. Flowers about $\frac{1}{2}$ inch long, yellow. Calyx glabrous, the upper lip with two oblong-triangular teeth, the lower with three triangular equal teeth. Standard glabrous, keel longer than the standard and wings. Pod reddish-brown tinged with green, falling out of the calyx readily when ripe, $\frac{3}{4}$ inch long, swollen so as to be nearly cylindrical, not bossulated, much curved towards the base on the upper side, truncate obliquely upwards at the apex, which terminates in a beak. Seeds 6 to 10, ovoid, black, shining. Foliage delicate pea-green. Plant glabrous.

Needle Furze, Petty Whin.

French, *Genêt Anglais*. German, *Englischer Ginst*.

SPECIES II.—**GENISTA PILOSA.** *Linn.*

PLATE CCCXXVII.

Stems shrubby, much branched. Branches procumbent, striate, glabrous or with adpressed pubescence, without spines. Leaves silky-hairy beneath, unifoliate, oblanceolate or obovate, with tooth-like stipules. Flowers axillary, arranged in dense racemes. Calyx densely pubescent, with broadly lanceolate teeth, entirely persistent. Corolla with the outside of the standard and keel hairy. Pod linear-oblong, much compressed laterally, hairy.

On sandy and gravelly heaths. Very local in Cornwall, Sussex, Pembroke, Suffolk, and Worcestershire.

England. Shrub. Spring.

Stems much branched, "rooting" (Gr. and Godr.), leafless below. Leaves very shortly stalked, about $\frac{1}{4}$ inch long, folded longitudinally. Peduncles produced from the centre of a fascicle of leaves, longer than the calyx, without bracteoles. Flowers about $\frac{1}{2}$ inch long, yellow. Calyx silky, with the upper lip having 2 lanceolate lobes, the lower with 3 small triangular teeth. Pod blackish, falling out of the calyx readily when ripe, $\frac{3}{4}$ inch long, laterally compressed so as to be nearly flat, bossulated by the seeds causing the portion over them to bulge outwards. Seeds 3 to 7, globular compressed, olive-coloured. Of this species I have never seen living examples.

Hairy Green Weed.

French, *Genêt Velu*. German, *Behaarter Ginst*.

SPECIES III.—**GENISTA TINCTORIA.** *Linn.*

PLATE CCCXXVIII.

Stems shrubby, much branched. Branches erect or ascending, rarely decumbent, striate, glabrous or slightly pubescent, without spines. Leaves glabrous, ciliated (or pubescent only on the ribs and margins), unifoliate, elliptical, with small adnate stipules which have a triangular point. Flowers axillary, arranged in dense racemes. Calyx glabrous or slightly pubescent, with subulate teeth, at length splitting in a circumcissile manner a little above the base, the teeth and upper portion of the tube falling off when the fruit is matured. Corolla glabrous. Pod linear-oblong, much compressed laterally, glabrous, or hairy only on the margin.

Var. α , *glabra*.

Branches erect or ascending. Plant glabrous.

Var. β , *humifusa*.

Branches decumbent, hairy. Margins and midribs of the leaves, peduncles, bracts, calyces, and back of the valves of the pod hairy.

In meadows, pastures, and heaths, and on the borders of fields. Not uncommon in England, but rare in Scotland, where the neighbourhood of Kirkeudbright on the West, and the Pentland Hills on the East, are the most northern localities on record. Var. β at Kynance Cove, Lizard, Cornwall.

England, Scotland, Ireland. Shrub. Late Summer, Autumn.

Rootstock creeping. Stems much branched, especially below, rather stiff, 1 to 2 feet high, with adpressed leaves. Leaves $\frac{1}{2}$ to 1 inch long, very shortly stalked, with long hairs on the margins. Flowers $\frac{1}{2}$ to $\frac{3}{4}$ inch long, bright yellow, on pedicels shorter than the calyx. Bracteoles subulate, applied to the calyx. Calyx-teeth longer and more slender than in the preceding species. Pod 1 to $1\frac{1}{4}$ inch long, brown when ripe, surrounded at the base by a prominent rim, which is all that remains of the calyx, the upper part being deciduous. Seeds olive, 5 to 10, orbicular-compressed, dim. Plant bright green.

Var. β differs by its smaller size, more procumbent branches, and by having these, as well as the midrib of the leaves, pedicels, calyces, and back of the valves of the pod, hairy.

Dyers' Green Weed, Wood Waxen.

French, *Genêt des Teinturiers*. German, *Färber Ginst*.

All parts of this plant yield a yellow dye, and have long been used by dyers for producing this colour, especially for wool that is to be dyed green with woad. In some parts of England the plant is collected in large quantities by the poor and sold to the dyers. The ashes form an alkaline salt, which has been used as a remedy in dropsy and other diseases.

GENUS III.—SAROTHAMNUS. *Wimmer.*

Calyx herbaceous, shortly campanulate, 2-lipped, the upper lip emarginate or 2-toothed, the lower a little longer and 3-toothed, both lips at length scarious at the apex. Corolla with the standard spreading, suborbicular, cordate at the base, longer than the wings and keel. Keel obtuse, at last reflexed. Stamens monadelphous, with the tube cleft. Style very long, much curved, or rolled into a ring. Stigma terminal, capitate. Pod oblong, compressed and

much exerted. Seeds numerous, with the depressed hilum covered by the dilated extremity of the funiculus.

Shrubs with erect angulated green branches, not spinous. Leaves stalked, trifoliate: the upper ones subsessile and unifoliate. Stipules none. Flowers large, golden yellow, axillary, solitary and in pairs, stalked, drooping.

The name is derived from *σαρος* (*saros*), a broom, and *θαμνος* (*thamnos*), a bush.

SPECIES I.—**SAROTHAMNUS SCOPARIUS.** *Koch.*

PLATE CCCXXIX.

S. vulgaris, "*Wimmer*." *Gr. & Godr. Fl. de Fr. Vol. I. p. 348.*

S. communis, "*Wimm.*" *Fries, Sum. Veg. Scand. p. 48.*

Spartium scoparium, *Linn. Sm. Eng. Bot. No. 1339.*

Genista scoparia, *Lam. Dic. Vol. II. p. 623.*

Cytisus scoparius, *Link. Enum. Vol. II. p. 241.*

Leaves trifoliate, stalked, those from which the flowers are produced sessile and frequently unifoliate. Style coiled, enlarged and furrowed at the apex. Pods much compressed, glabrous except on the margins.

On low hills, heaths, commons, waysides, and in woods. Very common, and generally distributed as far North as Sutherland.

England, Scotland, Ireland. Shrub. Spring and early Summer.

A much-branched shrub 1 to 5 feet high, with green, deeply furrowed, straight branches. Leaves with the leaflets elliptical-obovate, $\frac{1}{4}$ to $\frac{1}{2}$ inch long; the petioles about as long as the leaflets, except those from which the flowers are produced. Flowers on long pedicels, bright yellow, 1 inch long, arranged in racemes which are often combined so as to form panicles. Calyx widely bell-shaped, laterally compressed, divided by a shallow notch into an upper and lower lip, the two sepals of the upper and the three of the lower lip being only indicated by extremely short teeth; both the divaricate lips becoming scarious at the margins. Pod $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, linear-oblong, much compressed, bossulated over the seeds, black when ripe, hairy on the upper and lower sutures, the valves opening with elasticity and twisting upon their own axis when ripe. Seeds olive, roundish ovoid, compressed, shining, with an oval depression at the hilum, where the funiculus spreads out into a 2-lobed expansion. Plant deep green, hairy.

Common Broom.

French, *Spartain à Balais.* German, *Besenartige Pfrienen.*

Of all our leguminous shrubs, the Broom is perhaps the favourite, and has, besides its own attractions, the interest of historic and poetic associations. It was not

unknown to the ancients, and is mentioned by Pliny, though it is probable that they were best acquainted with the Spanish broom, *Spartium junceum*. Our English poets have delighted to sing of the golden blossoms and bright green branchlets of this beautiful plant. Chaucer says :—

“Amid the Broom he basked him in the sun.”

Cowper tells us of

“The Broom,
Yellow and bright as bullion unalloyed.”

Wordsworth says :—

“The Broom,
Full-flowered, and visible on every steep,
Along the copses runs in veins of gold.”

While the northern ballad, so characteristic of the strong love of “Home, be it ever so homely,” of the Scotch declares,

“More pleasant far to me the Broom
That blows sae fair on Cowden Knowes,
For sure so sweet, so soft a bloom,
Elsewhere there never grows.”

Its almost perennial blossom is well described by a Welsh poet :—

“Its branches are arrayed in gold,
Its boughs the sight in winter greet,
With hues as bright, with leaves as green,
As summer scatters o’er the scene.”

But we might go on adding to the list of poets who have loved to describe the beauties of this favourite shrub. The Scotch claim the Broom, and delight to tell of the favoured spot

“Down among the Broom, the Broom,
Down among the Broom, my dearie,
The lassie lost her silken snood,
That gaed her greet till she was wearie.”

And Burns, in a burst of patriotism, celebrates his native haunts of love and poesy.

“Their groves of sweet myrtle let foreign lands reckon,
Where bright beaming summers exalt the perfume ;
Far dearer to me yon lone glen of green breckan,
Wi’ the burn stealing under the lang yellow Broom.
Far dearer to me are yon humble Broom bowers,
Where the bluebell and gowan lurk lowly unseen ;
For there lightly tripping amang the wild flowers,
A-listening the linnet oft wanders my Jean.”

Nor is the “bonnie broom” less conspicuous in the annals of heraldry than in song. Ordinary school history tells us that King Henry II. of England, wearing the Broom, *Planta genista*, in his cap, assumed and transmitted the royal surname of Plantagenet ; but there is strong evidence to prove that Fulke, Earl of Anjou, the grandfather of Henry, assumed the *Planta genista* as an emblem of humility on leaving

for the Holy Land; but the plant has been from a remote period the badge of Bretagne. May not it have been assumed by Henry on account of his claim to the sovereignty of that country, which he afterwards obtained.

The Broom frequently occurs as an ornament in the wardrobe rolls both of England and France. We read that the queen of Richard II. had a dress of rosemary and broom in gold and silk on a white ground. A Broom plant, his own herallic device, with its open pods despoiled of its seeds, ornaments the tomb of this same lady's husband in Westminster Abbey. Antiquarians have spent not a little learning and research on the origin of this simple emblem. We are inclined to agree with the charming authoress of "Weeds and Wild Flowers," who says, "They have overlooked the simple beauty of this design—they have not felt with the designer the truthful force of the silent record. The ripened seed had fallen from its husk; the germ of immortality was parted from its shell; the body was laid in the dust and the soul was called into a life eternal ere the marble tomb was raised." Rarely, indeed, does the sculptured shield or stately tomb convey its lessons to us with so much truth and dignity as in that empty broom-pod. Those who are learned in old historic lore tell us that from very early times the Broom was a favourite emblem in France. In the year 1234, St. Louis, as he is called, celebrated the coronation of his queen by establishing a new order of knighthood—the Soldiers of the Broom—*Milites genestellæ*, the collar of which was composed of broom-flowers interwoven with the white lily, signifying humility and purity, and bearing a golden cross with the motto "*Exaltat humilis*." In 1368 we read of Charles V. of France bestowing the insignia of the "Broom-pod" on his favourite chamberlain. In 1389, Charles VI. gave the same decoration to his kinsmen, creating them knights of "the Star of the Broom-pods." The Highland clan *Forbes* are true Plantagenets so far as their device goes, for the Broom is still their distinctive badge.

The Broom is known to be a very exhaustive crop to the land, so that a hedge of it will impoverish the ground for some distance on each side of it. It is said that sheep which eat the pods become subject to a sort of intoxication, and yet it is supposed by farmers to be beneficial to them in some conditions, and the intoxicating effects soon pass off. The inebriating properties of these pods do not act only on the brute creation. Allan Ramsay, when speaking of the ale brewed by a certain landlady, says:—

"Some say it was with pith (pips?) of broom,
Which she stowed in her masking loom,
Which in our heads raised sic a soom."

Before the introduction of hops, broom-tops were often used to communicate a bitter flavour to beer. The young flower-buds are occasionally pickled and used as a substitute for capers. The stems yield an excellent fibre, which was formerly woven into cloth in this country, and is now used for this purpose in the south of France, while the refuse supplies the manufacture with firing. Paper is also made from this fibre. As an article of domestic cleanliness, the Broom may have originally obtained its common name.

"The vagrant artist oft at eve reclines,
And Broom's green shoots in besoms neat combines."

Dr. Prior tells us that the name "comes from Brom or Brame, a word of the same origin as bramble, but at present applied exclusively to a shrub of which besoms are made, and called from it brooms." The branches have been used for tanning leather,

showing the existence of tannic acid. The seeds, when roasted, form no bad substitute for coffee. The wood when it is suffered to attain a sufficient age is much prized by cabinet-makers, who employ it in veneering. The twigs are used for thatching cottages and ricks, and the whole plant, when burned, yields an ash which contains 29 per cent. of carbonate of potash. The salt of broom, or *Sal Genistæ*, was formerly used in medicine; so that we may really say that there is not a portion of this plant without its use.

Medicinally the Broom has long been administered as a diuretic, and we find that broom-tops are still retained in the New Pharmacopœia of the United Kingdom, published 1864. They are given as "the tops fresh and dried from indigenous plants." Dodoen recommended a decoction of the tops in dropsy, and for "stoppages of the liver." The powdered seeds have likewise been administered, and sometimes a tincture is employed. Dr. Cullen recommended a decoction of the plant very strongly, and his testimony is supported by Pereira and others. It is said that Broom acts beneficially in dropsy when all other remedies have failed. Dr. Mead mentions a case of this kind; and it is recorded that some soldiers of the Swedish army, who suffered from dropsy after an epidemic fever in 1759, were cured by taking a lixivium of the ashes of the Broom. Gerarde abounds in recommendations of this plant, but does not confine its virtues to the only disease for which it is supposed to be effectual, but tells us of all sorts of fleshly ills for which it is an effectual cure. He records "that the worthy prince of famous memory, Henry VIII., king of England, was wont to drinke the distilled water of broom-flowers, against surfets and diseases thereof arising."

GENUS IV.—ONONIS. *Linn.*

Calyx herbaceous, campanulate, 5-cleft, with long narrowly triangular teeth. Standard broadly oval, keeled on the back, with the lamina spreading; keel produced at the apex into a sharp-pointed beak directed towards the standard. Stamens monadelphous, rarely diadelphous. Style very long, geniculate-ascending. Stigma terminal, subcapitate. Pod short, inflated, exserted or included in the calyx. Seeds few, with the funiculus not dilated at the hilum.

Perennial herbs or undershrubs, often with long woody root-stocks, with or without spines. Leaves stalked, pinnately trifoliate, or the upper ones unifoliate. Stipules more or less adhering to the petioles. Flowers rose-colour, purple, or yellow, axillary and terminal, sessile, or more often pedunculate. Peduncles 1- or more-flowered.

The derivation of the name of this genus is from *ονος* (*onos*), an ass. One author considers that it refers to the hindrance which it gives to these or other animals when employed at the plough; and another writer says that it was given because some of the species are said to be grateful to asses.

SECTION I.—BUGRANA. *D. C.*

Peduncles very short, 1-flowered, without an articulation beneath the flower.

SPECIES I.—*ONONIS CAMPESTRIS*. *Koch.*

PLATE CCCXXX.

Bab. Man. Brit. Bot. ed. v. p. 74.

Koch & Ziz. Cat. Pal. 22 (non Sieb.). Gr. & Godr. Fl. de Fr. Vol. I. p. 373. Fries.

Sum. Veg. Scand. pp. 48, 162.

O. arvensis, Sm. Eng. Bot. No. 682.

O. arvensis, var. β, Hook. & Arn. Brit. Fl. ed. viii. p. 97. Benth. Handbook Brit. Fl. p. 160.

O. spinosa, Linn. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 173.

Rootstock short, not creeping, without subterranean stolons. Stem erect or ascending, firm, much branched, generally (but not always) with a number of spreading spines which are frequently in pairs, slightly glandular-hairy, with a woolly strip on one side, which changes sides at each node. Lower leaves trifoliate, the upper ones generally unifoliate; leaflets linear-oblong, denticulate. Flowers solitary and axillary, chiefly on the bases of the spines, in an elongated panicle or raceme towards the upper part of the branches. Peduncles shorter than the calyx. Calyx with its segments nearly equal, shorter than the mature pod. Corolla much longer than the calyx. Pod erect, lenticular-ovoid, laterally compressed. Seeds 1 to 3.

On commons, barren pastures, and road-sides. Plentiful in England, but apparently more rare in Scotland, where it has not been recorded northward of Haddingtonshire and Dumbartonshire; possibly it occurs in Forfarshire; but there it may be the spinous variety of the following species.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock short, woody. Stems stiff, purplish, with ascending or erect branches, 1 to 2 feet high. Spines $\frac{1}{2}$ to 1 inch or more long, spreading, leafy at the base, as it is only the apex of these stunted branches which become barren. Leaves shortly stalked, with large conspicuous oblong adnate stipules, which have a free ovate-acuminate apex; leaflets stalked, oblong or strap-shaped, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, with very prominent lateral veins, each of which is excurrent into one of the teeth. Calyx with 5 strap-shaped lanceolate equal teeth longer than the tube. Flowers $\frac{3}{4}$ inch long, pale rose-colour, with deeper-coloured lines, darker on the apex of

the keel, occasionally entirely white. Pod olive fawn-colour, $\frac{3}{4}$ inch long, with a short beak bent downwards. Seeds dark reddish-brown, roundish, compressed, granulated with small prominent points, and having a deep circular depression at the hilum. Plant deep-green, more or less glandular-pubescent. An undershrub, the greater part of the stem dying in winter, the branches at first unarmed, but I have never seen it without spines late in the season.

Upright Rest-Harrow.

French, *Bugrane Épineuse*. German, *Dornige Hauhechel*.

By old writers this plant is also called Cammock-Furze or Petty Whin. Gerarde says "it is sooner found than desired of husbandemen, because the tough and woodie rootes are cumbersome unto them, by reason they do staie the plough and make the oxen stande; whereupon it was called Rest Plough or Rest Harrow." It seems difficult to destroy it by fallowing; and is called by old herbalists *Arresta bovis* and *Remora aratri*. Gerarde says: "Pliny reporteth 'that being boyled in Oxymel (or the syrup made with hony and vineger) till the one half be wasted, it is given to those that have the falling sicknesse. The tender sprigs or crops of this shrub, before the thornes come forth, are preserved in pickle, and be very pleasant sauce to be eaten with meat as a sallad, as Dioscorides teacheth.'"

SPECIES II.—*ONONIS ARVENSIS*. *Fries.*

PLATE CCCXXXI.

- O. arvensis*, "*Linn.*" *Benth.* in Eng. Bot. Sup. No. 2659. *Bab. Man. Brit. Bot.* ed. v. p. 74. *Fries*, *Sum. Veg. Scand.* pp. 48 and 162 (*Linn. Syst. Veg., nec. Herb.*).
O. arvensis, "*Linn.*" var. α , *Hook. & Arn.* *Brit. Fl.* ed. viii. p. 97. *Benth.* *Handbook Brit. Fl.* p. 159.
O. procurrens, *Wallroth*, *Sched. Crit.* p. 381. *Gr. & Godr.* *Fl. de Fr.* Vol. I. p. 374.
O. repens, "*Linn.*" *Koch*, *Syn. Fl. Germ. et Helv.* ed. ii. p. 173.

Rootstock very long, emitting subterranean stolons. Stem procumbent and rooting at the base, then ascending or prostrate; rather weak, much branched, most commonly (but not always) without spines, glandular-hairy all round. Lower leaves trifoliate, the upper ones unifoliate; leaflets oblong, or oblong-ovate, denticulate at the margin. Flowers solitary and axillary in an elongated raceme towards the upper part of the branches. Peduncles shorter than the calyx. Calyx with the segments nearly equal, longer than the mature pod. Corolla much longer than the calyx. Pod erect, lenticular-ovoid, laterally compressed. Seeds 1 to 3.

In pastures, sandy places, and on cliffs by the sea-coast. Common, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Distinguished from the last, which it closely resembles, by its procumbent growth, and the pods being shorter than the sepals. The whole plant is less rigid, with larger leaves, and in this country at least, is usually destitute of spines. It is much more clammy to the touch, and has a stronger odour. The flowers are more distinctly racemose.

As a satisfactory proof of the specific distinction between this and the last species, although so much alike, I may mention that the larvæ of the moths *Heliothis marginata* and *peltigera*, which feed upon the present plant, refuse to eat *O. campestris*—showing there is some difference in their chemical composition.

Linnaeus appears to have had a very indistinct idea of the two preceding species of *Ononis*, if one may judge from the alterations in their nomenclature made by him from time to time. In the first edition of the "*Species Plantarum*," p. 716, there are two names to represent these two, and doubtless a third species not found in Britain,—the *O. hircina* of Jacquin. These are *O. spinosa*, with a var. β *mitis*, and *O. repens*. In the second edition, at p. 1006, there is an addition of *O. antiquorum* to the above, and in *O. spinosa* he has var. α *mitis* and var. β *spinosa*. In the twelfth edition of the "*Systema Naturæ*," vol. ii. p. 478, *O. spinosa* is entirely expunged, and he gives *O. antiquorum*, *O. arvensis*, and *O. repens*. On turning to his *Herbarium*, there is a specimen of the *O. campestris* of Koch, a narrow-leaved form, named *O. "antiquorum."** There is a second specimen of *O. campestris* (Koch), the broad-leaved form, with two names (both in Linnaeus's handwriting) upon it,—*O. "spinosa"* and *O. "arvensis;"* the latter probably written at a later date. Besides this, on another sheet, there is *O. hircina* of Jacquin bearing the name of *O. "arvensis"* in Linnaeus's own handwriting. A small stunted specimen of *O. procurrans* (Wallr.) is also in the *Herbarium*, bearing the name of *O. "repens."*

In this inextricable confusion I have retained the names "*campestris*" and "*arvensis*," because they are in general use in this country, though I have great misgivings respecting the expediency of this course; as when the botanists of each country seek only to preserve unity of nomenclature within restricted geographical areas, it is fatal to all general agreement on the subject. Besides, the name *O. arvensis* has been used to include both our species, and it is always better to discard such a name, unless a majority of botanists have agreed to use it in a restricted sense, or there be sufficient evidence to show that the originator of the

* This is not the *antiquorum* of Gr. & Godr., "*Flore de France*," as it has large flowers and an apiculate standard.

name intended it to apply to only one of the forms which subsequent writers have placed under it.

Procumbent Rest-Harrow, Wild Liquorice.

French, *Bugrane des Champs.* German, *Feld Haucchel.*

SECTION II.—NATRIX. *Mönch.*

Peduncle often elongated, 1- or several-flowered, with the pedicels articulated to it. When there is only a single flower, there is thus an articulation beneath it.

SPECIES III.—ONONIS RECLINATA. *Linn.*

PLATE CCCXXXII.

Rootstock none. Stem ascending or decumbent, with numerous weak spreading branches, without spines, glandular-hairy all round. Leaves all trifoliate; leaflets oblong-obovate or obovate, denticulate only at the apex. Flowers solitary, axillary, in a short compact raceme at the termination of the branches. Pedicels longer than the calyx, at length hooked so that the calyx droops after flowering. Calyx with the lower segment much shorter than the others. Corolla about as long as the calyx. Pod drooping, oblong-cylindrical. Seeds numerous.

In sandy places. Very rare. Among the débris at the foot of a cliff overhanging the rocky shore three miles north-west of the Mull of Galloway, Wigtownshire: and between the Hermit Rock and Corbelet's Bay, and on the hills of Mauney, near La Trieve, Alderney. There can be but little doubt, however, that the Scotch locality found by Professor Graham is one where the plant is not indigenous.

[Scotland.] Channel Islands. Annual. Summer.

A small plant, the British examples which I have seen not being above 2 inches long; but on the Continent it sometimes attains the size of 6 inches. Leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, tapering towards the base, acutely toothed at the rounded or subtruncate apex; middle leaflet stalked. Stipules large, half-ovate, adhering for the greater portion of their length to the leafstalk. Peduncles slender, ascending, with the articulation marking the commencement of the pedicel near the apex; pedicel first straight and ascending, but after flowering curved sharply round. Calyx very deeply divided, the 4 upper lobes elliptical-lanceolate, the lower one which is much shorter, linear-lanceolate. Flowers $\frac{3}{8}$ inch

long, rose-colour, with the wings and keel paler. Pod in the British specimens not longer than the calyx, brown and glandular-hairy. Plant dull-green, entirely viscous and pubescent.

Small Spreading Rest-Harrow.

SUB-TRIBE II.—VULNERARIÆ.

Stamens monadelphous. Pod 1-celled. Leaves pinnate, with an odd terminal leaflet, the lower ones occasionally unifoliate, from the abortion of the lateral leaflets.

GENUS V.—ANTHYLLIS. *Linn.*

Calyx more or less coloured, tubular-inflated, indistinctly 2-lipped, upper lip 2-toothed, lower 3-toothed. Standard oval, spreading, as long as the wings and keel; wings adhering to the keel above the claws; keel obtuse or very slightly beaked, with a depression on each side above the claw. Stamens monadelphous. Style subulate, curved, ascending towards the apex. Stigma terminal, capitate. Pod stipitate, suborbicular, compressed, 1- or 2-seeded, completely inclosed in the tube of the calyx, which in fruit becomes much swollen, membranaceous, bladdery, and with the teeth connivent at the apex.

Herbs or undershrubs, with the flowers yellow, purple, or rose-colour, in lateral and terminal heads.

The word anthyllis is an ancient name given to a number of plants, coming from *ανθος* (*anthos*), a flower. One etymologist adds to the derivation the word *ιουλος* (*ioulos*), down, in reference to the flowers being usually downy.

SPECIES I.—ANTHYLLIS VULNERARIA. *Linn.*

PLATE CCCXXXIII.

Stems herbaceous. Leaves pinnate, the lower ones with the terminal leaflet much larger than the others, which in the radical leaves are frequently absent. Heads of flowers generally in pairs. Calyx-tube with the mouth oblique, inflated in fruit when it becomes white and chaff-like; upper teeth longest, ovate-triangular, united together nearly to the apex, the 3 lower lanceolate-subulate, the lowest shortest of all. Pod extremely small, quite concealed in the calyx-tube.

Var. α, vulgaris.

A. vulneraria, *Boreau*, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 146.

Flowers yellow. Involucre generally shorter than the flowers.

Var. β , *Dillenii*.

A. Dillenii, *Schultz.* *Boreau*, l. c.

Flowers red. Involucre nearly as long as the flowers.

On dry banks and pastures. Rather common, and generally distributed. Var. β on the South-west coast of England and Wales.

England, Scotland, Ireland. Perennial. Summer.

Rootstock woody, branching into numerous heads, which produce straight, stiff, ascending stems, 6 to 18 inches long, or even more. Root-leaves on long stalks, with a large elliptical terminal leaflet, and frequently a few much smaller lateral ones. Stem-leaves with from 2 to 6 pair of linear-elliptical leaflets, and an odd one. Flower-heads 1 to $1\frac{1}{2}$ inch across, subsessile, involucrate, generally in pairs at the top of the stem, one of them a little more distinctly stalked than the other; occasionally there are axillary sessile heads, but more generally the axillary heads are at the termination of short branches. Flowers $\frac{5}{8}$ inch long, not much exceeding the calyx. Petals with very long claws. Limb of the standard with an appendage at the base on each side; wings and keel adhering together. Pod about $\frac{1}{2}$ inch long, half-oval, apiculate, glabrous, reticulated. Seeds 1 or 2, ovoid, smooth.

Var. β is smaller than α , and may be a distinct sub-species; but I have only seen dried specimens, and none of them have the ripe fruit from which Professor Boreau takes some of his characters; his *A. Dillenii* having the pod more longly stipitate, and with a straight instead of a curved apiculus.

Common Kidney Vetch, Ladies'-finger, or Lamb-toe.

French, *Anthyllide Vulnérable*. German, *Gemeiner Wundklee*.

The specific name of this plant indicates its reputation in pharmacy as an astringent and vulnerary. It is said that Gesner first raised the report of its properties in this respect, which are, however, very doubtful, and possibly consist in nothing but its soft downy nature, which may on emergency serve to stanch blood, and give time for nature to effect a cure. The belief in its virtues was, however, great at one time, and in 1727 it was regularly sold in the Dublin market by the name of Stanch. A yellow dye may be obtained from it. It affords excellent pasture for sheep. Where the soil was a reddish clay, Linnæus remarked the blossoms to be red; but in white clay, white.

Dr. Withering says: "In Portugal we have always found them red." In England most commonly, as the rustic poet observes,—

"The yellow Lamb-toe I have often got,
Sweet creeping o'er the banks in sunny time."

All the species of *Anthyllis* are very beautiful when in flower, and this little British species is quite worth cultivation.

SUB-TRIBE III.—TRIFOLIEÆ.

Stamens diadelphous, the upper one being free from the other 9. Pod 1-celled, without spurious partitions. Stem generally herbaceous. Leaves trifoliate, generally with denticulate margins and numerous excurrent nerves.

GENUS VI.—MEDICAGO. *Linn.*

Calyx bell-shaped, 5-toothed; teeth elongated, equal or the upper ones shorter. Corolla deciduous. Standard scarcely spreading, longer than the wings and keel. Wings not cohering at the apex. Keel obtuse. Stamens diadelphous, not adhering to the petals. Filaments not dilated towards the apex. Style glabrous, with a capitate stigma. Pod exserted, reniform, sabre-shaped, or (most commonly) rolled up like a compressed spiral spring, many-seeded, rarely 1-seeded, indehiscent or opening only at the external suture.

Herbs, often annual or biennial, more rarely undershrubs or shrubs, with the leaves pinnately-trifoliate, with herbaceous stipules adhering by their bases to the petioles. Flowers yellow, more rarely purple, usually in stalked axillary heads or short racemes; more rarely the inflorescence is reduced to sub-solitary flowers.

The name of this genus is said to come from Medike, a name given by Dioscorides to a Medean grass.

SECTION I.—FALCAGO. *Reich.*

Pod many-seeded, dehiscent, sabre-shaped, or twisted into a loose helix leaving an aperture in the centre of the coil, without spines, and without a concentric extra-marginal nerve.

SPECIES I.—MEDICAGO SATIVA. *Linn.*

PLATE CCCXXXIV.

Fries, Mant. III. p. 91.

Rootstock woody. Stems hollow, erect, much branched; branches ascending. Flowers numerous, in oblong rather loose racemes; standard streaked with violet lines. Pods downy, twisted into a loose spiral of 2 or 3 turns.

On pastures, dry banks, and borders of fields. Not uncommon

in districts where Lucerne is cultivated, but having no claims to be considered indigenous.

[England, Scotland.] Perennial. Summer and Autumn.

Stems stout, erect, 1 to 2 feet high, hollow, cylindrical with raised lines. Leaves stalked; leaflets elliptical-oblongate, $\frac{1}{2}$ to $1\frac{1}{4}$ inch long, denticulate towards the apex, the central one inserted on the common petiole above the others. Stipules lanceolate-subulate. Flowers $\frac{1}{2}$ inch long, bluish-purple, more rarely yellowish, in axillary stalked racemose heads, which are from $\frac{3}{4}$ to $1\frac{1}{2}$ inch long. Pedicels shorter than the calyx. Calyx with the teeth triangular-subulate, nearly equal, longer than the tube. Standard longer than the calyx-teeth and exceeding the wings and keel. Mature pod rupturing the calyx, olive-brown, forming a helix of about $\frac{1}{4}$ inch in diameter, and generally making about $2\frac{1}{2}$ turns, pubescent with adpressed hairs and faintly reticulated. Seeds yellowish-brown, rectangular-oval, smooth, dim, with a deep depression at the hilum. Plant bright-green, with scattered adpressed pubescence.

The yellowish-flowered variety is considered by Koch and Fries to be the *M. media* of Persoon, while Godron and Boreau refer that name to *M. sylvestris* (Fries).

Common Lucerne.

French, *Luserne*. German, *Luzerne*.

As a fodder plant the Lucerne has been cultivated for ages in the South of Europe. It was brought into notice in England by Harte, in 1757, and since that time has been commonly cultivated in light lands. It grows very rapidly, and may be cut in favourable seasons twice or three times. On land adapted to it it will yield good crops for six or seven years, or longer. At one time Lucerne was a very favourite plant with the farmer, and it is said that cattle thrive better on it than on any other kind of food. One writer estimates that three horses might be kept on $\frac{1}{4}$ of an acre. Various circumstances, however, have interfered with the regular culture of this crop in our own country, and its value as an agricultural plant has been much discussed. According to Sir Humphry Davy, its nutritive properties are, when compared with red clover and saintfoin, as 23 to 39. Pigs, sheep, and cows eat it greedily; but it must be given only in moderate quantities, or disease is likely to ensue.

SPECIES II.—**MEDICAGO FALCATA.** *Linn.*

PLATES CCCXXXV. CCCXXXVI.

Rootstock woody. Stems solid, decumbent at the base, diffusely branched. Branches spreading. Flowers numerous, in short racemes or corymbose-racemose heads. Pods downy, falcate, semi-circular, or twisted into a ring.

SUB-SPECIES I.—*Medicago sylvestris*. *Fries*.

PLATE CCCXXV.

M. sylvestris, *Fries*, Mant. III. p. 92. *Bab. Man. Brit. Bot. ed. v. p. 75.**M. falcata*, var. *Hook. & Arn. Brit. Fl. ed. viii. p. 98. Benth. Handbook Brit. Fl. p. 161.**M. media*, "*Pers.*" (*falcato-sativa*), *Reich. Fl. Germ. Excurs. p. 504.**M. falcato-sativa*, *Gr. & Godr. Fl. de Fr. Vol. I. p. 382.**M. falcata*, β *versicolor*, *Wallroth, Sched. Crit. p. 398. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 176.*

Flowers in a short raceme, yellow changing to blackish green, finally becoming purplish at the tips; standard striped with dark-green lines. Pod coiled into a semicircle or into a complete flat ring.

In sandy and gravelly places. Rare. Confined to the counties of Cambridge, Norfolk, and Suffolk, where these three are contiguous, in the neighbourhood of Chippingham, and Thetford, and at Cromer.

England. Perennial. Summer and Autumn.

Stems weaker, more branched and diffuse than in *M. sativa*. Leaflets generally smaller and narrower. Flowers in shorter heads, and the pods not coiled, never making more than a single turn and sometimes less.

The greater number of botanists consider this plant either as a hybrid between *M. sativa* and *M. falcata*, or as a variety of the latter, to which it appears to be really more nearly related. *Fries* gives as a distinguishing character the pith being interrupted, not contiguous so as to make the stem perfectly solid as in his *M. falcata*; but this does not appear to be the case in the few specimens which have come under my notice. *Fries* emphatically denies the possibility of its being a hybrid, giving, however, no reason for his opinion. But as in this country it appears to be found in places where *M. sativa* does not occur, this may be one of the grounds on which he has arrived at this conclusion.

The pod, though generally making one complete turn, is occasionally very little more curved than in the ordinary form of *M. eu-falcata* of this work; and the disposition of the flowers is also variable.

As I have never seen the plant alive, I do not feel competent to give any decided opinion on the distinctness of *M. sylvestris* as a species; so I have adopted the middle course of considering it as a sub-species of *M. falcata*, of which, however, it is possible that it is merely a variety; this, however, can only be tested by long-continued cultivation from seed.

Fries' Lucerne.

SUB-SPECIES II.—*Medicago eu-falcata*.

PLATE CCCXXXVI.

M. falcata, *Fries*, Mant. III. p. 93. *Lab. Man. Brit. Bot.* ed. v. p. 75. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 383.

Flowers in a short corymbose raceme, yellow; standard streaked with dark brown lines. Pod twisted on its axis, not coiled, nearly straight or falcate.

In sandy and gravelly places. Rare. In Cambridgeshire, Norfolk, and Suffolk, growing with *M. sylvestris*. It has been also reported from Devon, Dorset, Sussex, Kent, Surrey, Hertford, Glamorgan, Yorkshire, and Durham; but the greater number of these stations are either mistakes, or the plant has been perhaps introduced with ballast or otherwise.

England. Perennial. Summer and Autumn.

Stem 1 to 2 feet high, diffusely branched. Leaves elliptical or strapshaped-elliptical, $\frac{1}{2}$ to $\frac{3}{4}$ inch long, denticulate at the apex. Flowers $\frac{3}{8}$ inch long, bright yellow, in small head-like racemes about $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Pod $\frac{1}{2}$ to $\frac{3}{4}$ inch long, generally very slightly curved upwards, and never forming more than a semicircle. Seeds closely resembling those of *M. sativa*, but rather smaller. Plant bright-green, slightly pubescent.

The original figure in English Botany (which is retained in the present edition) certainly represents this plant, but the ripe pod added below is that of *M. sylvestris*, and has doubtless been drawn from a different specimen, so that a new drawing of the pod has been made.

Yellow Lucerne.

French, *Luserne en Faucille*. German, *Sichelförmiger Schneckenklee*.

This plant has been but little cultivated in England, but in Switzerland is grown to some extent as a fodder crop, being there considered hardier than Lucerne. Its nutritive qualities are probably equally great.

SECTION II.—LUPULINÆ. *Gr. & Godr.*

Pod 1-seeded, indehiscant, kidney-shaped, with the empty apex coiled into a small helix, without spines and without a concentric extra-marginal nerve.

SPECIES III.—*MEDICAGO LUPULINA*. *Linn.*

PLATE CCCXXXVII.

Rootstock none. Stems spreading or procumbent. Leaflets roundish, inversely-deltoid at the base. Flowers in axillary stalked

globular-ovate densely racemose heads, which become oblong in fruit. Pod slightly curved, with the apex alone coiled, the sides marked with elevated ridges which anastomose and form a network with elongated meshes.

In pastures, on dry banks, roadsides, and in waste places, &c. Extremely common, and generally distributed.

England, Scotland, Ireland. Annual or biennial. Spring to Autumn.

Stems varying in length from a few inches to 2 feet, much branched. Leaves on long stalks, the uppermost subsessile, trifoliate, with the middle leaflet separated from the others; leaflets $\frac{1}{4}$ to $\frac{3}{8}$ inch long, obovate or roundish, with an inversely-deltoid base, finely denticulate towards the apex, where it is emarginate, with a sharp tooth in the centre of the notch. Stipules half-cordate-ovate, cuspidate, finely denticulate, adhering to the petiole at the base. Peduncles $\frac{3}{4}$ to $1\frac{1}{4}$ inch long. Flowers bright yellow, $\frac{1}{8}$ inch long, very numerous, in heads $\frac{1}{4}$ to $\frac{3}{8}$ inch across. Pedicels shorter than the calyx. Calyx-teeth lanceolate-acuminate, longer than the tube. Standard longer than the wings and keel. Head of fruit $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Pod black, glabrous or slightly pubescent, $\frac{1}{2}$ to $\frac{3}{4}$ inch long to the end of the kidney-shaped portion, after which the apex makes a complete turn; but this coil has a much smaller diameter than that of the circle of which the kidney-shaped portion forms part. Seed solitary, transversely ovoid, yellowish, slightly shining, smooth, with a tubercle close to the hilum, which is depressed. Plant bright-green, sub-glabrous or hairy: on dry chalky banks it is sometimes densely pubescent.

Black Medick, Nonsuch, Yellow Clover, Shamrock.

French, *Luserne Lupuline*. German, *Hopfen Schneckenklee*.

This plant is cultivated in Norfolk, and is there called Black Nonsuch and Shamrock. It is considered by some farmers as one of the most valuable of artificial grasses, and is excellent fodder for sheep. It is frequently mixed with rye-grass and clover.

SECTION III.—SPIROCARPOS. *D. C.*

Pod many-seeded, indehiscent, coiled into a close helix without an aperture in the centre of the coil, with a concentric extra-marginal nerve on each side of the dorsal suture, and commonly bordered with spines or tubercles.

SPECIES IV.—**MEDICAGO DENTICULATA.** Willd.

PLATE CCCXXXVIII.

M. polycarpa, Willd. *Gr. & Godr. Fl. de Fr. Vol. I. p. 389.*

No rootstock. Leaflets oblanceolate-obcordate, not blotched. Stipules with long slender laciniae on the margins. Flowers few, in long-stalked, lax sub-umbellate heads. Pods coiled into a spiral making from 2 to 4 turns, orbicular-discoïd; coils reticulated, becoming very slightly smaller towards the apex, with strong anastomosing veins on the faces; their back narrow, with a single dorsal nerve and a broad lateral furrow on each side of it (*i. e.* between the dorsal and extra-marginal nerves). Spines or tubercles in 2 rows, divaricate, hooked at the end or nearly straight. Seeds numerous, reniform, notched at the hilum. Plant glabrous, or nearly so.

*Var. α, vulgaris.**M. denticulata*, Willd.

Spines subulate, equalling half the diameter of the coils.

Var. β, apiculata.

M. apiculata, Willd. *Sp. Pl. Vol. III. p. 1414.* Koch, *Syn. Fl. Germ. et Helv. ed. ii. p. 180.*

Spines very short, straight.

On sandy banks and dry chalky waste places. Not uncommon in the South and East of England—in Devon, Dorset, Hants, Sussex, Kent, Essex, Suffolk, and Norfolk. It has occurred in several other places, but doubtless introduced either with ballast or among continental seed.

England, [Scotland,] Ireland. Annual or biennial. Spring and Summer.

Stems several from the crown of the root, prostrate, 3 inches to 2 feet long, with 4 longitudinal furrows. Leaves stalked; leaflets $\frac{1}{4}$ to 1 inch long, wedge-shaped or inversely deltoid, rounded and denticulated in the apical half, notched at the apex, with a slender tooth in the centre of the notch. Stipules half-triangular-sagittate, cut into numerous long slender segments. Peduncles axillary, 2- to 10-flowered. Flowers bright-yellow, about $\frac{1}{6}$ inch long, umbellate, on very short pedicels. Calyx-teeth triangular-subulate, longer than the tube. Pod olive, about $\frac{1}{4}$ inch across, regularly coiled, the coils becoming very little smaller towards the apex, their sides netted with very prominent elevated veins; back of the

coils sharp, with a strong marginal nerve and another a little way from it on either side. Spines variable in length, in 2 rows, each spine connected both with the dorsal nerve and also with the one on that side towards which the spine is directed, so that its base interrupts the furrow that runs between these nerves. Seeds numerous, yellowish-brown, transversely oval, unequal at the base. Plant bright-green, glabrous, or occasionally with a few scattered hairs.

Reticulated Medick.

rench, *Luserne Denticulée.* German, *Gezahnfrüchtiger Schneckenklee.*

SPECIES V.—**MEDICAGO MACULATA.** *Sibth.*

PLATE CCCXXXIX.

M. polymorpha, *Linn. Sm. Eng. Bot. ed. i. No. 1616.*

Rootstock none. Leaflets inversely deltoid, obovate, generally with a dark blotch in the centre. Stipules denticulate, with triangular acuminate teeth on the margins. Flowers few, in long-stalked, lax sub-umbellate heads. Pods coiled into a spiral making 4 or 5 turns, globular, scarcely compressed; coils becoming gradually smaller towards the apex, not reticulated, but with indistinct concentric veins on the faces; their back rather broad, with a double nerve and a very narrow lateral furrow on each side of it (*i.e.* between the dorsal and extra-marginal nerves). Spines in 2 rows, divaricate, curved throughout. Seeds numerous, slightly notched at the hilum. Plant with scattered hairs.

In pastures, waste places, hedge-banks, and by roadsides. Frequent in the South of England, especially on sandy or chalky soils, but not native North of Yorkshire.

England, [Scotland,] Ireland. Annual or biennial. Spring and Summer.

Very like *M. denticulata*, but generally larger, the leaflets broader and with a blackish-purple irregular blotch in the centre of each. Stipules shorter and broader, and having triangular teeth instead of the long slender segments of *M. denticulata*. When in fruit, the two cannot possibly be mistaken for each other, as in the present species the pod is coiled into a little ball about the size of a large pea, not compressed, and without the elegant reticulations on the faces present in *M. denticulata*. The dorsal nerve is also double in *M. maculata*, the extra-marginal nerves are much closer to it, and the spines are curved over the faces of the pod. The whole plant is of a brighter green, and there are more or less

numerous long scattered articulated hairs on the stem, petioles, stipules, peduncles, and calyx.

Spotted Medick.

French, *Luserne Tachée.* German, *Arabischer Schneckenklee.*

SPECIES VI.—**MEDICAGO MINIMA.** Lam.

PLATE CCCXL.

Rootstock none. Leaflets narrowly wedge-shaped, truncate or obcordate. Stipules half-ovate, entire or with a few short teeth on the margins. Flowers few, in shortly-stalked, lax sub-umbellate heads. Pods coiled into a spiral of 3 to 5 turns, globular, scarcely compressed, the coils becoming gradually smaller towards the apex, not reticulated, but with very indistinct veins on the faces; their back narrow, with a single nerve and a very broad lateral furrow on each side of it (*i.e.* between the dorsal and extra-marginal nerves). Spines in 2 rows, slightly spreading, straight, most of them with a small hook at the summit. Seeds numerous, reniform, with a small tubercle at the hilum. Plant thickly covered with short stiff hairs.

In dry sandy places. Rare. Confined to the South-east of England, where it certainly occurs in Kent, Suffolk, Norfolk, Essex, and Cambridge. It has been reported from other counties, but probably erroneously.

England. Annual or biennial. Spring and Summer.

A small plant, with numerous rigid prostrate stems, 2 inches to 1 foot long. Leaflets rarely above $\frac{1}{4}$ inch long, very narrow. Flowering peduncles shorter than the leaves, 2- to 5-flowered. Flowers yellow as in the preceding species, but smaller, about $\frac{1}{8}$ inch long. Pods $\frac{1}{8}$ to $\frac{1}{4}$ inch in diameter, resembling small burrs with the spines generally longer in proportion than in the preceding species; extra-marginal nerve very remote from the dorsal nerve, having a broad shallow furrow interrupted by the bases of the spines. Plant greyish-green, with the stems stouter in proportion, and with shorter internodes than in *M. maculata*. Pods much smaller, about the size of a sweet-pea seed.

Little Bur Medick.

French, *Luserne Naine.* German, *Kleinster Schneckenklee.*

GENUS VII.—**MELILOTUS.** *Tournef.*

Calyx campanulate, 5-toothed ; teeth elongated, sub-equal, or the upper one shorter. Corolla deciduous. Standard scarcely spreading, equal to or longer than the wings and keel ; wings not cohering at the apex, adhering to the keel above the claw. Keel obtuse ; stamens diadelphous, not adhering to the petals ; filaments not dilated towards the apex. Style filiform, glabrous ; stigma terminal. Pod stipitate, exserted, ovoid or oblong, straight, 1- to 4-seeded, indehiscent.

Herbs (generally biennial) with the leaves pinnately trifoliate ; the leaflets usually finely and acutely toothed ; the stipules adnate to the petioles ; flowers yellow, more rarely white, in slender elongated stalked racemes.

The name of this genus comes from the words *mel*, honey, and *lotus* ; meaning honey-lotus. The plants are a favourite resort of bees.

SPECIES I.—**MELILOTUS OFFICINALIS.** *Willd.*

PLATE CCCXLI.

Hook. & Arn. Brit. Fl. ed. viii. p. 100. *Benth.* Handbook Brit. Fl. p. 162. *Wallroth.* Sched. Crit. p. 390. *Fries*, Sum. Veg. Scand. p. 48.

M. macrorrhiza, *Pers.* Syn. Plant. Vol. II. p. 348. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 182. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 402.

Trifolium officinale, *Sm.* Eng. Bot. No. 1340.

T. Melilotus officinalis, var. γ , *Linn.* Sp. Pl. ed. ii. p. 1078.

T. macrorrhizum, *Waldst. und Kit.* Pl. Rar. Hung. Tab. XXVI.

Root much thickened, and elongate. Stem erect, branched throughout. Racemes elongated, dense both in flower and in fruit. Corolla more than twice as long as the calyx ; standard, wings, and keel, all equal in length. Pod obovate-ovoid, shortly stipitate, shortly acuminate and apiculate at the apex, faintly reticulated with indistinct raised veins, and with short adpressed hairs on the sides.

In bushy places, borders of fields, and by roadsides. Rather rare, but pretty generally distributed in the southern part of the Island, especially near the coast ; rare in Scotland, and probably introduced in most of the localities : it has the appearance, however, of being wild in Haddingtonshire.

England, Scotland, Ireland. Biennial or perennial. Late Summer and Autumn.

Root tapering, frequently of the thickness of a man's finger. Stem very firm, almost woody at the base, 1 to 4 feet high. Leaflets $\frac{1}{2}$ to 1 inch long, those of the lower leaves obovate, those of the upper elliptical, all serrate. Stipules triangular-subulate, with the base adhering to the leafstalk. Racemes axillary, stalked, $\frac{3}{4}$ to 2 inches long when in flower, $1\frac{1}{3}$ to 3 inches long (excluding the stalk) when in fruit. Flowers deep yellow, $\frac{1}{4}$ inch long. Calyx-teeth nearly equal, triangular-subulate, as long as the tube, which is not ruptured by the mature fruit. Pedicels about as long as the calyx-tube when in flower, and then slightly curved, but hooked downwards when in fruit. Pod $\frac{1}{4}$ inch long, black when ripe, with an indistinct network of elevated veins, and numerous short adpressed deciduous hairs. Seeds 1 or 2, yellowish, cordate-ovate, with the base unequal, compressed. Plant bright-green, glabrous, or nearly so.

Common Melilot.

French, *Mélilot Officinal*. German, *Gebräuchlicher Steinklee*.

At one time this plant was cultivated in England for fodder, but it is now seldom seen, having, like the Medick, given place to the clover. In Switzerland and the neighbouring countries it abounds in the pastures, and is an ingredient in the green Swiss cheese called Schabzeiger, which is made in the canton of Glarus, and is by many persons highly esteemed. It is stated in many books that this plant enters into the composition of the Gruyère cheese, which is altogether erroneous. The Schabzeiger cheese is made by the curd being pressed in boxes with holes to let the whey run out; and when a considerable quantity has been collected, and putrefaction begins, it is worked into a paste with a large proportion of the dried herb *Melilotus* reduced to a powder. The herb is called in the country dialect "*Zieger kraut*," *curd herb*. The paste thus produced is pressed into moulds of the shape of a common flowerpot, and the putrefaction being stopped by the aromatic herb, it dries into a solid mass, and keeps unchanged for any length of time. When used it is rasped or grated, and the powder mixed with fresh butter is spread upon bread. It is either much relished or much disliked, like all such substances with a singular taste and smell. The whole plant has a peculiar scent, which becomes more perceptible when it is dry, and has some resemblance to *Anthoxanthum*, the sweet-smelling vernal grass. The flowers are sweet-scented, and a water distilled from them is used for giving flavour to various substances. In medicine this herb has had its day. It was at one time esteemed emollient and digestive. It is recommended by Gerarde in all manner of disorders—for a poultice, the juice to be dropped into the eyes to "clear the sight;" alone with water to heal wens and ulcers, and also mixed with a little wine it "mitigatheth the paine of the eares and taketh away the paine of the head." That the *Melilot* was at one time a very common crop in England we have Gerarde's testimony, for he says, "for certainty no part of the world doth enjoy so great plenty thereof as England, and especially Essex, for I have seen between Sudbury in Suffolke and Clare in Essex, and from Clare to Hesselingham, very many acres of carable pasture overgrowne with the same; in so much that it doth not onely spoil their land, but the corn also, as Cockle or Darnel, and is a weed that generally spreadeth over that corner of the shire."

SPECIES II.—**MELILOTUS ALBA.** *Lam.*

PLATE CCCXLII.

Hook. & Arn. Brit. Fl. ed. viii. p. 100. *Benth.* Handbook Brit. Fl. p. 163.*Fries*, Sum. Veg. Scand. p. 48. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 183. *Gr. & Godr.*

Fl. de Fr. Vol. I. p. 402.

M. vulgaris, "*Willd.*" *Wallroth*, Sched. Crit. p. 393. *Bab.* Man. Brit. Bot. ed. v. p. 76.*M. leucantha*, *Koch*, ap. *D. C.* Fl. Fr. Vol. V. p. 564. *Hook.* in Eng. Bot. Sup. No. 2689.*Trifolium Melilotus officinalis*, var. β , *Linn.* Sp. Plant. ed. ii. p. 1078.

Root slightly thickened and elongated. Stem erect, branched throughout. Racemes much elongated, rather lax, especially in fruit. Corolla twice the length of the calyx. Standard longer than the wings and keel, which are equal. Pod ovoid, slightly narrowed at the base, shortly apiculate and acuminate at the apex, distinctly reticulated with prominent raised veins on the sides, which are quite glabrous.

In waste places, particularly on railway-banks. Not uncommon, but apparently not permanently established in any of its localities.

[England, Scotland, Ireland.] Biennial. Late Summer and Autumn.

This plant differs from *M. officinalis* by its more slender root and stem, which, however, attains as great a height; by its more slender and lax racemes, smaller flowers, which are about $\frac{1}{5}$ inch long, and white. The pods are also smaller, $\frac{1}{8}$ inch long, less distinctly stipitate, and less enlarged towards the apex, with a much more distinct network of veins on the faces, and destitute of the adpressed hairs which more or less thickly clothe those of *M. officinalis*.

The standard exceeding the corolla and wings, which are of equal length, will sufficiently distinguish the flower even in a dried state.

As Willdenow describes his *M. vulgaris* as having the wings longer than the keel, though shorter than the standard, it is most probable that his plant belongs to a white variety of the following species.

*White Melilot.*French, *Mélilot Blanc.* German, *Weisser Steinklee.*

SPECIES III.—**MELILOTUS ARVENSIS.** *Wallroth.*

PLATE CCCXLIII.

Bab. Man. Brit. Bot. ed. v. p. 76. Benth. Handbook Brit. Fl. p. 163. Hook. & Arn. Brit. Fl. ed. viii. p. 100.

Wallroth, Sched. Crit. p. 591. Fries, Sum. Veg. Scand. p. 48.

M. officinalis, "Lam." Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 183. Gr. & Godr. Fl. de Fr. Vol. I. p. 32.

M. Petitpierreana, "Willdenow." Reich. Fl. Excurs. p. 498.

Root slightly thickened and elongate. Stem erect, branched, especially near the base. Racemes elongated, rather dense in flower, but lax in fruit. Corolla twice the length of the calyx. Standard longer than the wings, which exceed the keel in length. Pod shortly stipitate, shortly oval-ovoid, scarcely acuminate but apiculate at the apex, with very conspicuous transverse folds, which are at length replaced by seams on the faces, which are quite glabrous.

In waste places and roadsides. Rare, and probably native only in Essex, Herts, Cambridge, Norfolk, and Suffolk. In Kent and South Essex I have seen it growing plentifully in grass fields, doubtless introduced with continental seed, and I have specimens which grew under similar circumstances, from Yorkshire and Lancashire. In Scotland, found only on the ballast hills at St. David's, Fifeshire.

England, [Scotland,] Ireland. Biennial. Late Summer and Autumn.

Closely resembling the two preceding, but not so tall, being from 1 to 3 feet high, most branched towards the base. Flowers about the size of *M. alba*, generally pale yellow, but sometimes white, when it appears to be the *M. Petitpierreana* of Willdenow. Fruiting racemes more elongated than those of *M. officinalis*, but less so than those of *M. alba*. Pod $\frac{1}{6}$ inch long, not black when ripe as in the two preceding, but brownish-olive, rounder and less acuminate at the apex than in either; when young it is marked with strongly-defined transverse wrinkles or folds, but when mature, the folds disappear, and in their places, or rather by the side of where they were, seams or furrows are to be found. In dried specimens in flower, the keel, standard, and wings being each a little longer than the other serves to distinguish this from the two preceding species.

Field Melilot.

French, *Mélilot de Petitpierre.* German, *Gebräuchlicher Steinklee.*

SPECIES IV.—**MELILOTUS PARVIFLORA.** *Desf.*

PLATE CCCXLIV.

Hook. & Arn. Brit. Fl. ed. viii. p. 100.*Desfontaines*, Fl. Atlantica, Vol. II. p. 192. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 183. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 401.*M. indica*, *All.* Fl. Pied. Vol. I. p. 308. *Coss. & Germ.* Fl. de Par. ed. ii. p. 159.*Trifolium Melilotus indica*, *Linn.* (?) Sp. Plant. ed. ii. p. 1077.

Root slender, not elongate. Stem erect, flexuous, branched. Racemes elongated, rather lax in fruit. Corolla not twice the length of the calyx; standard longer than the wings and keel, which are equal. Pod sessile, globular-ovoid, rounded and apiculate at the apex, reticulated with strongly-marked elevated veins on the sides, which are quite glabrous; upper suture not thickened or channelled.

In waste places and by roadsides, and in cultivated fields. A plant which has been introduced in this country within the last few years, but is now not uncommon about Battersea and Wandsworth. It has also occurred near Liverpool, and it is highly probable that it will extend its area in course of time, as it appears to thrive in the localities where it is at present established.

[England.] Annual. Summer and Autumn.

A much smaller plant than any of the preceding, from 6 to 15 inches high, with the stems slender and flexuous. The flowers much smaller, pale yellow, with the calyx-teeth shorter and triangular, not subulate. The pods are much rounder, olive when ripe, about $\frac{1}{8}$ inch long, reticulated like those of *M. alba*, but with the veins more distinct. The seed is always solitary, brownish, roughened with small prominent points. The plant also appears to be truly annual, which is rarely the case with any of the preceding, although they may occasionally be so.

*Small-flowered Melilot.*French, *Métilot à Petites Fleurs*. German, *Kleinblumiger Steinklee*.**GENUS VIII.—TRIGONELLA.** *Linn.*

Calyx campanulate, 5-toothed; teeth elongated, sub-equal, or the upper ones longer. Corolla deciduous; standard equal to or longer than the wings and keel; wings not cohering at the apex; keel usually extremely short, obtuse, generally shorter than the wings. Stamens diadelphous, not adhering to the petals; fila-

ments not dilated towards the apex. Style filiform, glabrous. Stigma obtuse. Pod exserted, linear, usually compressed, slightly curved, or nearly straight, many-seeded.

Herbs, often annual, with the leaves trifoliate, the leaflets often toothed. Stipules adnate, small. Flowers yellow or white, axillary and subsolitary or in pairs, or in stalked heads or short racemes.

The generic name comes from the Greek words *τρεις*, three, and *γωνια*, an angle, in allusion to the triangular appearance of the flower.

SPECIES I.—TRIGONELLA ORNITHOPODIODES. D.C.

PLATE CCCXLV.

Hook. & Arn. Brit. Fl. ed. viii. p. 101. Benth. Handbook Brit. Fl. p. 163.

Gr. & Godr. Fl. de Fr. Vol. I. p. 398.

Trifolium ornithopodioides, Linn. Eng. Bot. No. 1047. Bab. Brit. Bot. ed. v. p. 79.

Trifolium Melilotus ornithopodioides, Linn. Sp. Pl. ed. ii. p. 1078.

Medicago ornithopodioides, Fries, Mant. III. p. 93.

Falcatula Falso-trifolium, Brotero, Phyt. p. 160.

Aporanthus Trifoliastrum, Blomfield, Fl. Vect. p. 117.

Stems prostrate. Leaflets wedgeshaped-obovate, strongly toothed. Stipules lanceolate - subulate, entire. Flowers few (1 to 5), in a shortly-stalked umbellate head. Calyx-teeth nearly equal, longer than the tube. Corolla one-third longer than the calyx; standard longer than the wings and keel; the latter nearly as long as the wings. Pod oblong, obtuse, slightly compressed, nearly straight, about twice as long as the calyx, without nerves on the faces. Seeds 6 to 8.

On gravelly or sandy banks and commons. Rare, but widely distributed, though chiefly near the coast. I have seen specimens only from Somerset, Hants, Kent, Essex, Ayr, and Edinburgh.

England, Scotland, Ireland. Annual or biennial. Spring and Summer.

Stems spreading in all directions, lying flat on the ground, 1 to 5 inches long. Leaves on long stalks, with 3 digitately trifoliate leaflets $\frac{1}{8}$ to $\frac{3}{8}$ inch long, with very prominent veins terminating in sharp teeth. Stipules large, acuminate, membranous, with a few parallel herbaceous ribs. Peduncles axillary, shorter than the petioles, generally 2- or 3-flowered. Calyx-teeth triangular-subulate. Flowers very slender, $\frac{3}{8}$ inch long, white tinged with flesh-colour. Standard tapering gradually to the base; wings and keel suddenly narrowed into long slender claws. Pod $\frac{1}{4}$ to $\frac{3}{8}$

inch long, brown when ripe, straight on the upper suture, gently curved on the lower, truncate-rounded at the apex, with an apiculus at the extremity of the upper suture, dehiscing for the greater part of its length. Seeds smooth, ovoid-compressed, reddish-brown, or pale olive with dark elongated blotches. Plant greyish-green, glabrous, with sometimes a few hairs on the calyces.

This plant bears no resemblance to any British species, except *Trifolium subterraneum*, but it may be readily distinguished from that plant by being smaller, glabrous, with the petals free, inclining to flesh-colour instead of straw-colour; by the absence of barren calyces when in fruit, and by the long, exserted, many-seeded pod.

T. ornithopodioides accords ill with the other species of the genus *Trigonella*, which have the keel so minute that the flowers appear, on a cursory examination, to have only 3 petals; but it agrees still worse with the genus *Trifolium*, from which it is separated by its free petals, caducous corolla, and much exserted dehiscence many-seeded pod. From *Medicago*, in which Fries places it, by its less compressed and nearly straight pod, and the less compressed seeds not unequal at the hilum. Probably it ought to be placed in a genus by itself, as proposed by the late Dr. Bromfield.

Birds' Foot, Fenugreek.

French, *Trigonelle Pied d'Oiseau*.

This species is placed in the same genus as the *Trigonella Fœnum græcum*, the Common Fenugreek, which was formerly cultivated by the Romans, and is still employed in the agriculture of the South of Europe. The seeds have a medical reputation not as given internally, but as poultices, fomentations, and emollient applications. An old remedy in the *Pharmacopœia oleum e mucilaginis* contained these seeds, but they are now no longer used except by grooms and farriers in veterinary medicine.

GENUS IX.—TRIFOLIUM. Linn.

Calyx bell-shaped or tubular, 5-toothed; teeth elongate, generally unequal. Corolla persistent and withering, sometimes retaining its form but becoming scarious after flowering; more rarely deciduous; petals usually united; standard scarcely spreading, equalling or exceeding the wings and keel; wings free at the apex, often diverging; keel obtuse. Stamens diadelphous, more or less adhering to the petals; filaments slightly thickened towards the apex. Style filiform, glabrous. Stigma terminal, capitate. Pod short, sessile and included in the tube of the calyx, or stipitate and slightly exserted, ovoid, not compressed, 1- to 4-seeded, often indehiscent.

Herbs with the leaves digitately-trifoliate (rarely pinnately-trifoliate), the leaflets often toothed, and the stipules adnate.

Flowers whitish, rose-colour, purple, or yellow, in heads or compact spikes, which are axillary or terminal and generally many-flowered.

The name of this genus at once expresses its peculiarity, coming from *tres*, the Latin word for three, and *folium*, a leaf; all the species having trifoliate or three-parted leaves. The Greeks call it *τριφυλλον*; the French, *trèfle*; and the English, *trefoil* or *clover*.

SECTION I.—TRICOCEPHALUM. *Koch.*

Heads axillary, with few fertile flowers, burying themselves in the earth after flowering. Corolla caducous. Calyx without a callous or hairy ring at the mouth of the throat; fructiferous calyces dilated by the pods, covered by the sterile calyces, which are produced after flowering, and reflexed over the fertile ones so as to look almost like an involucre situated at the apex of the head instead of at its base. Pod sessile, enclosed in the tube of the calyx, 1-seeded.

SPECIES I.—TRIFOLIUM SUBTERRANEUM. *Linn.*

PLATE CCCXLVI.

Annual, pubescent. Leaflets obcordate, nearly entire except at the apex. Stipules adnate for half their length, ovate-acute. Flower-heads stalked. Fertile flowers 2 to 5. Calyx-teeth setaceous, as long as the tube. Corolla longer than the calyx. Upper flowers numerous, barren, produced after the fertile ones, reduced to abortive calyces, with the tube filiform, rigid, terminated by 5 points or teeth, reflexed over the fertile calyces around which they form a coma. Fructiferous calyx ovoid, ruptured by the pod, marcescent.

Among short herbage on pastures in sandy and gravelly places, not unfrequent in the South of England, extending as far North as Lancashire, Nottinghamshire, and Norfolk.

England. Annual. Early Summer.

Stems numerous, simple or slightly branched, prostrate, 2 to 18 inches long. Leaves on long petioles, digitately trifoliate; leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, inversely deltoid, obcordate, finely denticulated at the apical margin. Stipules very large, half-ovate, acute, adnate to the petiole for half their length. Peduncles varying in length from 1 to 3 or 4 inches, hooked at the apex in fruit. Fertile flowers generally 2 or 3, subsessile, $\frac{1}{2}$ inch long, white tinged with cream-colour, at first erect, afterwards spreading. Flowering calyx with a cylindrical tube and 5 subulate-filiform

teeth: fruiting calyces reflexed, with a membranous ovoid tube and curved teeth; barren calyces produced above the fertile flowers, after the corolla has fallen, at first appearing like a tuft of white fleshy tapering fibres, which press back the fertile calyces against the peduncle—afterwards, 5 points or teeth shoot out from the apex of the fleshy fibres, representing the calyx-teeth. Petals very long and narrow, cohering so as to form a tube; standard very slightly spreading, streaked with purple lines; wings shorter than the standard, but longer than the keel. Pods globular, compressed, with a single dark brown shining seed. Plant pale bright-green, very hairy.

This plant is remarkable for the pods being generally matured beneath the ground. At first both the peduncles and flowers are erect, *i.e.* parallel to the prostrate stems; but after flowering, the peduncle bends at the extremity, so that its apex is directed vertically downwards. At this time the growth of the barren calyces presses back the spreading fertile ones, until these are so much reflexed as to be parallel to the peduncle in a direction contrary to their original one, with their mouths directed away from its apex, and consequently towards the sky: preserving this direction, they bury themselves in the earth, and become rooted beneath the surface by the filaments issuing from the apex of the head, while the reflexed barren calyces protect the pods in their passage downwards.

Subterranean Trefoil.

French, *Trèfle Souterrain.*

SECTION II.—LAGOPUS. *Koch.*

Heads of flowers sub-globose, oblong, or cylindrical. Flowers numerous, sessile or sub-sessile. Pedicels without bracts at the base. Calyx not becoming vesicular in fruit, with a more or less conspicuous callous ring in the throat, or a circle of hairs; calyx-teeth generally ciliated, equal, or the lower one largest. Corolla purple, rose, white, or ochreous, persistent, marcescent, usually shrivelling. Pod sessile within the calyx, 1-seeded.

SPECIES II.—TRIFOLIUM PRATENSE. *Linn.*

PLATE CCCXLVII.

Rootstock branched, producing tufts of leaves, and straight, erect or somewhat decumbent, slightly branched or simple stems. Leaves distant, with oval or elliptical leaflets, only those of the lower leaves notched at the apex, finely denticulate on the margins, or nearly entire. Stipules membranous, with numerous nerves which anastomose near the margin, adnate for two-thirds their length, with

the free portion short, triangular, acuminate into an elongated setaceous point applied to the petiole; uppermost leaves opposite, close to the head of flowers, with greatly dilated stipules. Flower-heads sessile, terminating the stem and branches, at first subglobular, at length ovoid. Calyx-tube 10-nerved, hairy exteriorly, and hairy and with a slight callous ring at the throat; teeth very slender, subulate-setaceous, with a slender central nerve, the 4 upper ones about equal to the calyx-tube, the lower one exceeding it by one-half, undergoing very little alteration in fruit. Corolla generally longer than the calyx. Plant pubescent or sub-glabrous.

Var. *α*, *sativum*.

T. sativum, *Mill. Reich. Fl. Excurs.* p. 494.

Stem erect and robust, furrowed, hollow. Leaflets ovate-oval, nearly entire. Stipules very large. Calyx-teeth a little shorter than the tube, erect when in fruit.

Var. *β*, *sylvestre*.

T. pratense, *Reich. Fl. Excurs.* p. 494. *Boreau, Fl. du Centre de la Fr. ed. iii.* p. 156.

Stem ascending, rather slender, striated, usually solid. Leaflets oval or elliptical-oval, usually denticulate. Stipules much smaller than in var. *α*. Calyx-teeth about equal to the tube, and spreading when in fruit. Corolla longer than the calyx-teeth.

Var. *γ*, *parviflorum*.

Stem arched, ascending. Leaflets elliptical or oval-elliptical, finely denticulate. Calyx-teeth as long as the tube, and equalling or exceeding the corolla.

Var. *α*, by the borders of fields; escaped from cultivation. Var. *β*, in pastures, roadsides, and waste places; very common, and generally distributed. Var. *γ*, in dry places; I have seen specimens only from Forfarshire.

England, Scotland, Ireland. Perennial or biennial. Spring to Autumn.

Var. *α* (which is the cultivated red clover) has the stems 1 to 2 feet high. Lower leaves on long footstalks; leaflets flaccid, 1 to 2 inches long, those of the lower leaves frequently notched at the apex. Stipules of the lower leaves 1 to 1½ inch long, the upper ones much shorter and broader, whitish and sub-membranous, with numerous strongly-marked veins, which anastomose at the margins, adnate for the greater portion of their length,

the free part very short, triangular, acuminated into a slender awn-like point, and marked with anastomosing veins. Flower-heads 1 to $1\frac{1}{2}$ inch in diameter, sometimes in pairs, sessile or very shortly stalked beyond the uppermost pair of leaves, which are of unequal size, with the stipules dilated so as to be as broad as long, and embracing the head of flowers. Calyx-tube with 10 distinct elevated nerves, sometimes glabrous; teeth very slender, from a triangular base, not very unequal in length. Corolla $\frac{3}{4}$ inch long, dull purplish-pink, or more rarely ochreous-white, turning brown as it fades; petals united into a tube at the base. Pod small, opening by an operculum. Seed ovoid, smooth. Plant more or less hairy. Leaflets frequently with a curved transverse white mark in the middle.

Var. β , which is the common wild state of the plant, is smaller in all its parts, the stems being rarely above a foot long, and less erect, sometimes indeed procumbent, and always more or less curved towards the base; the stipules, especially, are much smaller, being from $\frac{1}{4}$ to $\frac{3}{4}$ inch long. The plant is generally more hairy, especially on the calyx; and as the calyx-teeth spread more in fruit, the fruiting heads look rougher. The flowers generally are of a deeper purple.

Var. γ has the flowers very much smaller than either in α or β , and the projecting calyx-teeth give a bristly aspect to the heads, which does not belong to either of the others.

Marl Grass, Honeysuckle Trefoil, Red Clover, Honeystalks.

French, *Trèfle des Prés*. German, *Roth Klee*.

The red Clover is perhaps the best known and commonest of our field crops, and is most important to the farmer as a fodder plant in this country. In its wild state it is perennial, but when grown artificially, it seldom lasts many years. It is usually sown, with corn, in the spring, and allowed to grow up after the crop is reaped; pastured by sheep and cattle, and either cut for hay the following year or mowed several times like lucerne, and employed for soiling or feeding in the farmyard. Rye-grass is commonly sown with Clover, being considered to correct the heating properties of hay made from Clover alone. Clover succeeds best on a deep sandy, but rich soil, which is favourable to its long roots; but it will grow on any soil, provided it be dry. Marl, lime, or chalk, is very congenial to Clover—containing much alkaline matter and lime; it will not flourish on land that has been exhausted of these substances, and which, consequently, becomes, in agricultural phrase, “clover-sick.” Hence, it ought not to be grown without allowing some years to elapse between each crop. On good soils fitted for its production, Red Clover will yield upwards of three tons of hay per acre. Like most plants of the kind, it is very succulent, and requires careful drying before it is stacked. In some parts of Russia it is allowed to ferment in heaps before drying, and cattle are said to relish it in this condition. To obtain clover-hay in its most nutritive state, it is desirable to cut it before it is in full flower,—a rule which applies to all similar crops. The nutritive qualities of Red Clover, according to Sir Humphry Davy, are as follows:—In 1,000 parts he found 39 of soluble or nutritive matter, 31 of starch or mucilage, 3 of sugar, 2 of gluten, and 3 of insoluble matter

or refuse. As a fodder plant, the Clover is very much esteemed by all farmers, and, according to Loudon, one acre is equal to three of ordinary pasture for feeding horses or black cattle, and the hay is reckoned more valuable by from 15 to 20 per cent. than the same weight yielded by the best meadow-land.

In feeding cattle with green Clover, great care must be observed to prevent the swelling or hoving, which is very apt to take place when they are first put upon this food, especially if it be wet with rain or dew; and the more luxuriant the Clover the greater is this danger. After being accustomed to this rich food for a few days, during which it should be given sparingly, the danger is less; but it is never safe to allow milch-cows to eat large quantities of wet clover. The Red Clover appears to have been introduced into English agriculture first in the year 1645, by Sir Richard Weston, who had observed its large and successful cultivation in Belgium. It appears to have been grown on the Continent long before this time, the absence of the fine natural pastures which we possess having led the French and German agriculturists to encourage the growth of those plants which would form their best substitute. Owing to the moisture of our climate, it is somewhat difficult to obtain a supply of clover-seed, and much that we use is imported from Belgium and Holland. The seeds and dry flowers of the Red Clover, like those of the white species, have been occasionally used as a substitute for flour in bread-making, and those of all the native species might possibly be so employed.

SPECIES III.—**TRIFOLIUM MEDIUM.** *Linn.*

PLATE CCCXLVIII.

Rootstock with slender elongated branches. Stems ascending or decumbent, flexuous, mostly branched. Leaves distant; leaflets oblong-elliptical, generally apiculate and not emarginate at the apex, entire on the margins. Stipules herbaceous, with a few nerves which do not anastomose, adnate for half their length, the free portion elongated, linear-triangular, not applied to the petiole. Uppermost leaves generally opposite, a little way below the flower-head, with slightly dilated stipules. Flower-heads shortly stalked, sub-globular. Calyx-tube 10-nerved, nearly glabrous exteriorly, without a callous ring, but with a ring of hairs in the throat; teeth very slender, subulate-setaceous, with a slender central nerve, the 4 upper ones a little shorter than the calyx-tube, the lower one exceeding it by about one-third; becoming spreading, but undergoing very little alteration in size in fruit. Corolla twice as long as the calyx. Plant sub-glabrous, with the margins of the leaflets ciliated.

In bushy places, by roadsides, rocks, and meadows. Common in the North of England and Lowlands of Scotland, but less so towards the two extremities of the island.

England, Scotland, Ireland. Perennial. Summer
and Autumn.

Stem rather slender, zigzag, 9 inches to 3 feet high. Lower leaves on long stalks, petioles becoming shorter as they are placed higher on the stem; leaflets 1 to 2 inches long, rather rigid, with prominent veins, and an edging of soft hairs. Stipules $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, with the free portion one-half of their length or more, herbaceous except along the line of junction with the petiole. Flower-heads terminal, more rarely axillary, in the latter case without a pair of leaves beneath; solitary or in pairs, 1 to $1\frac{1}{2}$ inch in diameter, becoming a little elongated in fruit. Flowers $\frac{3}{4}$ inch long, purplish-rose. Pod splitting longitudinally, with an ovoid smooth seed. Plant bright-green, slightly glaucous, sparingly hairy. The leaflets glabrous when fully grown.

A taller and more straggling plant than *T. pratense*, with larger and firmer leaflets, very different stipules, and deeper-coloured flowers.

Zigzag Trefoil, Cow Clover, Meadow Clover, Marl Grass.

French, *Trèfle intermédiaire*. German, *Mittlerer Klee*.

This species is sometimes cultivated in England as a fodder plant, but it is not generally a favourite, being less productive than the Red Clover and more difficult to extirpate when once grown. Its chief recommendations seem to be that it will resist drought and thrive on cold tenacious soils. Some writers, such as Sinclair, recommend it as preferable to any other species for permanent pasture on light dry soils.

SPECIES IV.—**TRIFOLIUM OCHROLEUCUM.** *Linn.*

PLATE CCCXLIX.

Rootstock branched, producing tufts of leaves, and nearly straight ascending simple or very slightly branched stems. Leaves distant; leaflets obovate, oval, or elliptical, those of the lower leaves notched at the apex; all finely denticulate on the margins, or almost entire. Stipules sub-herbaceous, with few veins which do not anastomose, adnate for about one-half their length, with the free portion lanceolate-acuminate. Uppermost leaves opposite, a little way below the flower-heads, with dilated stipules. Flower-heads shortly stalked, terminal, globose, at length ovoid. Calyx-tube 10-ribbed, with the throat nearly closed by 2 opposite callosities resembling lips; teeth rather slender, lanceolate-subulate, with a thick central nerve; upper 4 shorter than the calyx-tube, the lower one three times as long as the upper ones, becoming rigid and spreading, but scarcely enlarged in fruit. Corolla twice as long as the calyx. Plant pubescent.

In pastures, fields, and thickets, on dry clayey or gravelly soils.

Very local ; probably confined to the counties of Essex, Cambridge, Herts, Suffolk, and Norfolk.

England. Perennial. Summer and Autumn.

Rootstock many-headed, producing tufts of long-stalked leaves and flowering stems, which are 9 to 18 inches high, erect, with a slight curvature at the base. Leaflets $\frac{1}{2}$ to 1 inch long, those of lower leaves obovate, obcordate, becoming more oval or elliptical and entire on the apex, as they are placed higher on the stem. Stipules with long slender triangular points. The uppermost of the alternate leaves remote from the pair of opposite ones : these latter are generally considerably smaller in size, very shortly stalked, and with the stipules broader. Flower-heads $\frac{1}{4}$ to $1\frac{1}{2}$ inch above the involucre, $\frac{3}{4}$ to $1\frac{1}{4}$ inch in diameter. Flowers $\frac{3}{4}$ inch long, ochreous. The calyx-teeth erect when in flower, but spreading when in fruit, especially the lower one, which becomes reflexed. Pod longitudinally striate, opening by an operculum. Seed ovoid, smooth. Stem and petioles thickly clothed with spreading tawny hairs, the leaves with adpressed hairs.

This plant has much the habit of *T. pratense*, but the stipules are more like those of *T. medium*. The pale-yellow flowers form a conspicuous distinction from the common states of both these plants, but one on which implicit confidence cannot be placed, as *T. pratense* sometimes has flowers of that colour. The calyx-teeth are decidedly broader at the base, and tapering gradually in a triangular shape, and much more strongly nerved than in either of the two preceding species.

Sulphur-coloured Trefoil.

French, *Trèfle Jaunâtre*. German, *Blassgelber Klee*.

This species has been recommended to the experimental agriculturist as a substitute for others in certain soils and situations ; but it has met with no favour, and is not often grown at all.

SPECIES V.—**TRIFOLIUM MARITIMUM.** *Huds.*

PLATE CCCL.

Rootstock none. Stems several, ascending, branched. Leaflets oblanceolate, entire. Stipules herbaceous, with few nerves which do not anastomose, adnate for less than half their length, with the free portion elongated, linear-triangular. Uppermost leaves opposite, shortly stalked, a little below the flower-heads, with slightly dilated stipules. Flower-heads stalked, terminating the stem and branches, globose-ovoid, becoming ovate-ovoid in fruit. Calyx-tube 10-ribbed, sub-glabrous, the throat with lateral callosities nearly closing its mouth ; teeth rather shorter than

the tube, triangular-subulate, the 4 upper nearly equal, shorter than the calyx-tube, the lower one longer than the tube; all increasing in size and becoming rigid, spreading and somewhat leaflike in fruit, 3-nerved, with the central nerve very thick. Corolla twice as long as the calyx. Plant pubescent.

In grassy places by the sea and near brackish water, and in salt marshes. Rare, and confined to the South of England. I have seen it myself only in Kent and Essex, but have specimens from Gloucestershire. It is also reported, on good authority, from Somerset, Dorset, Suffolk, Norfolk, and Monmouth.

England. Annual. Summer.

Stems rather rigid, nearly straight, obliquely ascending, or in tall specimens decumbent, 6 to 18 inches long, repeatedly branched. Leaflets $\frac{1}{2}$ to $\frac{3}{4}$ inch long, widening towards the apex. Stipules $\frac{1}{2}$ to $\frac{3}{4}$ inch long, the free portion being about half this length, not applied to the petiole. Heads $\frac{1}{2}$ inch long, in fruit $\frac{3}{4}$ inch. Flowers pale flesh-colour, $\frac{3}{8}$ to $\frac{1}{2}$ inch long. Calyx-tube becoming bell-shaped, cylindrical and coriaceous in fruit, with 10 strongly-marked ribs; teeth then becoming spreading, herbaceous, with rigid nerves which run out into almost spiny points. Pod 2-valved. Seeds ovoid, smooth. Plant dull-green, pubescent, with distant short hairs, or more rarely sub-glabrous.

Teasel-headed Trefoil.

French, *Trèfle Maritime.*

SPECIES VI.—**TRIFOLIUM STELLATUM.** Linn.

PLATE CCCLI.

Rootstock none. Stems few, erect or ascending, simple. Leaflets wedge-shaped or inversely-deltoid-obovate, obcordate, denticulate at the apical margin. Stipules sub-membranous, with numerous herbaceous branching nerves which do not anastomose, adnate for half their length, with the free portion large, broadly-ovate, shortly-acuminate, often denticulate on the margins. Leaves all alternate. Flower-heads long-stalked, terminal, lax, sub-globose. Calyx-tube obconical, 10-ribbed, with long hairs, the throat having an elevated ring bearing long woolly hairs, which completely close its mouth; teeth much longer than the calyx, all nearly equal, subulate-filiform, erect in flower, triangular-subulate and spreading in fruit, 3-nerved, reticulated with long stiff hairs on the back. Corolla about as long as the calyx. Plant pubescent.

Perfectly naturalized on the ballast-heaps along Shoreham Harbour, where it has maintained its position since 1804.

England. Annual. Spring and Summer.

Stems 3 inches to 1 foot high, very slightly branched, and that only in the largest specimens. Leaves very distant, the upper ones on short stalks. Leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Stipules $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Heads $\frac{3}{4}$ inch across in flower, increasing to $1\frac{1}{2}$ inch in fruit. Flowers sub-sessile, $\frac{5}{8}$ inch long, white, tinged with flesh-colour, but inconspicuous from the long silky-haired calyx-teeth, which equal them in length; the teeth themselves scarcely lengthen in fruit, but become much broader at the base, so as to assume an elongate-triangular form, and spread horizontally like the rays of a star; the mouth of the tube becomes completely closed with the white hairs growing at the throat. Pod small, 2-valved. Seed ovoid, compressed, smooth, shining.

This has very little resemblance to any of the preceding species.

Starry-headed Trefoil.

French, *Trèfle Etoilé.*

SPECIES VII.—**TRIFOLIUM INCARNATUM.** *Linn.*

PLATES CCCLII. CCCLIII.

Rootstock none. Stems several (rarely solitary), erect or ascending, nearly simple. Leaflets inversely-deltoid-orbicular truncate or very faintly notched at the apex, finely denticulate on the apical margin. Stipules sub-membranous, with numerous branching veins which do not anastomose, adnate for three-quarters their length, with the free portion rather short, oval, obtuse. Leaves all alternate. Flower-heads stalked, terminal, dense, ovoid or ovoid-cylindrical, slightly elongating in fruit. Calyx-tube oblong, 10-ribbed, hairy, the throat having an elevated ring bearing short hairs, which do not completely close its mouth; teeth subulate-aristate, longer than the tube, the four upper ones nearly equal, the lowest a little exceeding them, erect in flower, becoming broader at the base and spreading in fruit, with a very thick central nerve and long stiff hairs. Corolla about as long as the calyx. Plant pubescent.

SUB-SPECIES I.—**Trifolium eu-incarnatum.**

PLATE CCCLII.

T. incarnatum, *Boreau*, Fl. du Centre de la Fr. ed. iii. p. 182

T. incarnatum, var. *a*, *Auct. Plur.*

Hairs of the stem slightly spreading. Head of fruit elongated, oblong-cylindrical. Calyx-teeth subulate-aristate, hairy to the point of the awns. Corolla crimson-red.

On the borders of fields and by roadsides where it has escaped from cultivation. Perfectly naturalized in Jersey, but scarcely so in Britain, although it frequently occurs both in England and Scotland.

[England, Scotland.] Annual. Early Summer.

Stems 6 to 18 inches high. Leaflets $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, nearly as broad as long. Stipules $\frac{3}{8}$ to $\frac{5}{8}$ inch long, generally with the terminal portion herbaceous; below this there is a purplish band, which, however, is terminal in the upper stipules, as these have no herbaceous point. Flower-heads spicate, 1 to 2 inches long, very dense. Flowers $\frac{1}{2}$ inch long. Calyx-teeth rigid, and spreading like a star in fruit. Whole plant densely pubescent.

The spicate heads of this clover distinguish it from all the other species included in the British Flora.

Crimson Clover.

French, *Trèfle Incarnat*. German, *Inkarnat Klee*.

Of late years this species of Clover has been much grown in England, and has long been cultivated in southern Europe as a fodder plant. It can be sown in the early autumn as soon as the corn is off the land; the latter being simply harrowed so as to loosen the surface. It grows with great rapidity, and yields a good crop early in the spring, when other green fodder is scarce, and it may be removed in time to sow corn. Sometimes it is sown in February and March, and can then be fed off and ploughed in time for sowing the turnip-seed. This rapid growth renders it very valuable to the farmer under certain circumstances, when he requires to raise a good supply of fodder between the regular rotation crops.

All cattle are fond of it when young and green; but when in flower its stems become hard, and it is not well adapted for hay. Like other similar plants, it is often sown with Italian rye-grass. It ripens seed readily, but, when left for this purpose, exhausts the ground considerably.

SUB-SPECIES? II.—*Trifolium Molinerii*. Balb.

PLATE CCCLIII.

Boreau, Fl. du Centre de la Fr. ed. iii. p. 182.

T. incarnatum, var. β , *Molinerii*, Auct. Plur.

Hairs of the stem adpressed. Head of fruit rather short, oblong. Calyx-teeth triangular-subulate, aristate, the points of the awns generally glabrous. Corolla whitish, turning to pale rose.

“Among short grass near the Lizard Point, Cornwall. First observed near Landewednack in 1838 by the Rev. W. S. Hore and the Rev. C. A. Johns, and afterwards by the latter gentleman along

the cliffs from Kynance to Cadgwith, a distance of six miles."— (Borrer, in Eng. Bot. Sup.)

England. Annual. Spring and early Summer.

Extremely like *T. eu-incarnatum*, of which it may possibly be merely the wild form, though constantly differing in its pale flowers. Stem shorter, and stouter in proportion to its length, with the hairs more adpressed. Calyx-teeth rather broader, and their points mostly glabrous. Both forms remain constant in cultivation, unlike the cultivated variety of *T. pratense*, which reverts in time to the ordinary wild state.

Balbi's Trefoil.

French, *Trèfle de Balbi*.

SPECIES VIII.—**TRIFOLIUM ARVENSE.** *Linn.*

PLATE CCCLIV.

Rootstock none. Stems several, ascending, branched. Leaflets elliptical- or oblanceolate - strapshaped apiculate, entire or toothed in the upper portion. Stipules adnate for less than half their length, with the free part elongated, setaceous. Leaves all opposite. Flower-heads terminal and axillary, stalked, ovoid, ovoid-cylindrical, or sub-globose. Calyx-tube bell-shaped, faintly 10-nerved, softly hairy, the throat having a slightly-elevated ring with long distant hairs which do not close its mouth; teeth setaceous, longer than the tube, nearly equal, plumose, erect, not altered in fruit. Corolla shorter than the calyx-teeth. Plant more or less hairy.

On dry pastures, downs, and sandy places. Not uncommon, and generally distributed, except in the extreme North of Scotland.

Stems numerous, 3 inches to 1 foot high, branched in the larger examples. Leaves numerous, very shortly stalked, the leaflets $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Stipules $\frac{1}{4}$ to $\frac{1}{2}$ inch long, the greater part free and very slender, with a few parallel veins. Flower-heads $\frac{1}{2}$ to 1 inch long, very dense, shortly stalked, terminating all the branches, and a few of them on peduncles from the axils of the leaves, the terminal ones sometimes appearing to be in pairs, from the uppermost of the axillary ones being situated very near it. Flowers $\frac{1}{4}$ inch long, white, turning to flesh-colour. Calyx-teeth very slender, erect, and with long soft hairs. Seeds sub-globose, smooth. Plant greyish-green, often tinged with red or purple.

This species is easily distinguished by its soft plumose heads; the leaves also are sub-fasciculate, those from the axils of which a branch is not produced having 1 or more smaller leaves in its place.

It varies much in the quantity of pubescence, the number and direction of the stems, the degree of denticulation in the leaflets, and the length of the hairs in the calyx, and has consequently been divided by Mons. Jordan into a number of species, several of which to me appear scarcely even deserving of the name of varieties; but his *T. gracile*, *T. rubellum*, and possibly *T. arenivagum*, of which I have seen no British specimens, may be distinct as sub-species.

Hare's-foot Trefoil.

French, *Trèfle des Champs.* German, *Acker Klee.*

SPECIES IX.—**TRIFOLIUM BOCCONI.** *Savi.*

PLATE CCCLV.

Rootstock none. Stems several or solitary, erect or ascending, generally simple. Leaflets obovate or oblanceolate, strongly denticulate in the upper half, and having the veins very prominent; the lateral veins straight. Stipules adnate for about half their length, with the free portion triangular-subulate; the upper ones, which embrace the flower-heads, only slightly dilated. Flower-heads terminal and axillary, sessile, the terminal ones mostly in pairs, ovoid or sub-globose, at length cylindrical-ovoid. Calyx-tube oblong, strongly 10-nerved, slightly swollen in fruit, with an indistinct callous ring. Teeth triangular, spinescent, with a strong nerve; the four upper ones nearly equal, three-fourths the length of the tube; the lower one equalling it. Plant more or less hairy.

On the tops of (turf?) walls and in dry places. Very rare. At Cadgwith and Landewednack near the Lizard, Cornwall.

England. Annual. Summer.

Stems in the British specimens which have passed through my hands only 1 inch high, but in Continental specimens sometimes 6 or 8 inches long. Leaves shortly stalked, the leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, with the nerves very prominent beneath. Heads $\frac{1}{4}$ to $\frac{3}{4}$ inch long, densely flowered. Flowers $\frac{1}{5}$ inch long, white tinged with pink. Corolla very slightly exceeding the calyx. Pod small, enclosed in the nearly unaltered calyx. Seed sub-globular, yellow, smooth. Plant rather rigid, dull-green, often with a reddish tinge.

Of this species I have seen very few British specimens, and no living examples. It cannot be confounded with any of our species except the following.

Boccone's Trefoil.

French, *Trèfle de Boccone.*

SPECIES X.—**TRIFOLIUM STRIATUM.** *Lin.*

PLATE CCCLVI.

Rootstock none. Stems numerous, nearly straight, ascending or procumbent, simple or slightly branched. Leaflets obovate or oblanceolate, faintly denticulate at the apical margin, the lateral veins straight, not prominent. Stipules adnate for about half their length, with the free portion short, triangular, acuminate into a long cuspidate point; the upper ones, which embrace the flower-heads, much dilated. Heads terminal and axillary, sessile, the terminal ones frequently in pairs, ovate-ovoid, at length ovoid-oblong, widest at the base. Calyx-tube oblong, strongly 10-ribbed, becoming swollen and ovoid in fruit, with an indistinct callous ring in the throat; teeth triangular-subulate, spinescent, with a strong nerve, the four upper ones nearly equal, about half the length of the calyx-tube, the lower one a little exceeding the others; all rigid and spreading in fruit. Plant more or less softly hairy.

On dry pastures and in waste places. Rather common in England. In Scotland it is confined to the East coast, where it is found as far North as Kincardineshire.

England, Scotland, Ireland. Annual. Summer.

Stems 3 to 18 inches long, generally numerous and spreading in a circle, often quite prostrate, but sometimes ascending or even sub-erect. Leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, rounded or truncate at the apex, with none of the veins prominent except the midrib. Flower-heads dense, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, increasing to $\frac{3}{4}$ inch when in fruit, mostly terminating the stem and short lateral branches (but there are also some sessile in the axils of the leaves), those of the main stems mostly in pairs, the others solitary. Flowers $\frac{1}{2}$ inch long, pale rose-colour. Calyx bulging, and becoming very strongly ribbed in fruit, densely clothed with soft hairs, the callous ring very indistinct, hairy, the hairs not closing the tube. Corolla a little longer than the calyx-teeth. Pod included. Seed ovoid, yellowish-brown. Stem, petioles, and leaflets with ascending or adpressed hairs. Plant dull-green.

A larger and less rigid plant than the last, with the leaflets much less rigid and without prominent veins. The upper stipules are much dilated, membranous, with purplish veins; the calyx-tube much swollen in fruit, more strongly ribbed, and the teeth shorter and narrower.

Soft-knotted Trefoil.

French, *Trèfle Strié.* German, *Gestreifter Klee.*

SPECIES XI.—**TRIFOLIUM SCABRUM.** *Linn.*

PLATE CCCLVII.

Rootstock none. Stems numerous, flexuous, prostrate or ascending, simple or slightly branched. Leaflets obovate or oblanceolate, finely-denticulate; the veins very prominent, the lateral ones hooked downwards. Stipules adnate for rather less than half the length, with the free portion lanceolate-triangular, contracted into a short point; the upper ones, which embrace the flower-heads, only slightly dilated. Heads of flowers terminal and axillary, sessile, solitary, ovoid, widest near the middle. Calyx-tube oblong, scarcely swollen in fruit, 10-ribbed, with a conspicuous callous ring in the throat; teeth triangular, spinescent, with a very thick nerve; the two upper ones rather shorter than the tube, the lateral ones equalling it, the lower one exceeding it; all erect in flower, curved outwards and lengthening until they all exceed the tube in fruit. Plant more or less pubescent.

In dry gravelly and stony pastures and waste places. Not uncommon in England. In Scotland confined to the East side, reaching as far North as Kincardineshire.

England, Scotland, Ireland. Annual. Summer.

Stems rather wiry, 3 to 9 inches long. Leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, very rigid from the thick veins which are curiously bent back close to the margin of the leaf. Stipules often tinged with purple. Heads rather few-flowered, $\frac{1}{4}$ to $\frac{3}{8}$ inch long, narrowed towards the base. Calyx with the tube purplish and the teeth green, the latter enlarging after flowering, spreading in fruit, and assuming the form of a bow with the convexity inwards; the tube swelling very slightly but becoming strongly ribbed in fruit. Flowers about as long as the calyx-teeth, whitish. Pod very minute, enclosed in the leathery calyx-tube. Seed ovoid, yellowish-brown. Plant more or less thickly clothed with adpressed rather stiff hairs.

A smaller and more wiry-stemmed plant than the preceding species, from which it may always be distinguished by the strong curved lateral veins of the leaflets. In fruit the two are very dissimilar, the calyx of the *T. scabrum* is much less swollen than that of *T. striatum*, with fewer and stiffer hairs and with much larger falcate green teeth, which have a very thick central nerve.

Rough Rigid Trefoil.

French, *Trèfle Scabre*.

SECTION III.—TRIFOLIASTRUM. *D. C.*

Flower-heads axillary and terminal, or all axillary, stalked or sessile, sub-globose or oblong. Flowers numerous, more or less distinctly stalked. Pedicels with bracts at the base. Calyx not becoming vesicular in fruit, without a callous or hairy ring in the throat; teeth equal, or the upper ones longer. Corolla persistent, rarely deciduous, purple, rose, or white; standard often folded over the fruit, and retaining its form, but becoming scarious and striated. Pod sessile or slightly stipitate within the calyx, often exserted, 2- to 6-seeded.

SPECIES XII.—**TRIFOLIUM GLOMERATUM.** *Linn.*

PLATE CCCLVIII.

Rootstock none. Stems numerous, slightly flexuous, prostrate or ascending, nearly simple or slightly branched, the central one elongate. Leaves rather shortly stalked; leaflets obovate, denticulated, rounded at the apex; veins very prominent, the lateral ones straight. Stipules adnate for less than half their length, with the free portion ovate, contracted into a long point; those which enclose the flower-heads dilated. Flower-heads axillary and terminal, sessile, solitary (or the terminal ones sometimes in pairs), not approximate, globular. Flowers sub-sessile. Calyx-tube oblong, 10-ribbed, glabrous, open at the throat; teeth ovate-acuminate, sub-spinescent, auricled at the base and reticulated, with a moderately thick central nerve, all nearly equal, shorter than the calyx-tube, at length spreading-recurved. Corolla longer than the calyx-teeth. Pod 2-seeded, shorter than the calyx-tube. Plant glabrous.

On dry, gravelly, and sandy commons, pastures, and waste ground. Rather rare. It has been reported from the counties of Devon, Dorset, Hants, Kent, Surrey, Middlesex, Suffolk, Norfolk, Leicester, Somerset, Denbigh, Carmarthen, and Glamorgan; but the records of its occurrence in the West of England require to be confirmed.

England. Annual. Early Summer.

Stems slender, spreading in a circle, 2 to 12 inches long. Leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, shaped like a boy's kite, sharply toothed at the margins from the apex nearly to the base. Flower-heads rather distant, about $\frac{1}{4}$ inch across, rather dense. Flowers sub-sessile, about $\frac{1}{4}$ inch long, pale bluish-purple; standard becoming scarious, stri-

ated, and not shrivelling after flowering. Pod about as long as the calyx-tube. Seeds 2, often reduced to 1 by abortion.

The smoothness of the plant, the globular heads, the shorter calyx-teeth enlarged immediately above the base, and the purplish flowers readily distinguish this plant from *T. scabrum*.

Smooth Round-headed Trefoil.

French, *Trèfle Aggloméré*.

SPECIES XIII.—**TRIFOLIUM SUFFOCATUM**. Linn.

PLATE CCCLIX.

Rootstock none. Stems numerous, prostrate, simple or slightly branched, the central one extremely short. Leaves on very long stalks; leaflets wedgeshaped-obovate, truncate or emarginate at the apex, denticulated in the apical half; veins rather prominent, the lateral ones straight. Stipules adnate for about two-thirds of their length, ovate, abruptly acuminate; those which enclose the flower-heads enlarged. Flower-heads terminal and axillary, sessile, solitary, approximate, sometimes confluent, ovoid. Flowers sub-sessile. Calyx-tube bell-shaped, faintly 10-nerved, sub-glabrous, open at the throat; teeth lanceolate-acuminate, not spinescent, not auricled at the base, with a slender central nerve, all nearly equal, at length spreading-recurved as long as the calyx-tube. Corolla shorter than the calyx-teeth. Pod 2-seeded. Plant glabrous.

On sandy and gravelly pastures and waste places. Rare. In the counties of Cornwall, Devon, Hants, Sussex, Kent, Suffolk, Norfolk; also in Wales.

England. Annual. Early Summer.

Stems prostrate, spreading in a circle, 1 to 7 inches long, often half-buried in the sand, the central one reduced to a sessile head of flowers. Leaves on stalks $1\frac{1}{4}$ to 2 inches long; leaflets $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Stipules thin and membranous. Heads about $\frac{1}{4}$ inch across, generally so crowded as to conceal the stem, which they clothe from the base to the summit. Flowers lax, sub-sessile, $\frac{1}{3}$ inch long, whitish; standard becoming scarious and slightly striate, but retaining its form much less distinctly than in *T. glomeratum*. Calyx-tube and teeth much less rigid than in the four preceding species. Pod enclosed in the calyx, containing 2 seeds.

This plant is easily distinguishable from all the British Trefoils by its dense masses of flower-heads, which sometimes appear to be in spikes, from the separate heads actually touching each other, although each one lies in the axil of a separate leaf. These

leaves have extremely long petioles in proportion to the size of the leaflets.

Dense-flowered Trefoil.

French, *Trèfle Etouffé.*

We have found this curious plant on the sandy sea-coast on our eastern shores, buried in sand so completely that even its seeds are perfected subterraneously and without light. On putting down a knife or a stick, the whole plant may be raised, and then its flowers and fruit come into view.

SPECIES XIV.—**TRIFOLIUM STRICTUM.** *Waldest. & Kit.*

PLATE CCCLX.

T. lævigatum, *Desf. Fl. Atl. Vol. II. p. 195.* *Gr. & Godr. Fl. de Fr. Vol. I. p. 416.*

Rootstock none. Stems few, erect or ascending, simple and straight, or slightly branched and flexuous. Lower leaves on rather long stalks, with obovate leaflets rounded at the apex; upper leaves shortly stalked, with elliptical-strapshaped sub-acute leaflets; all with the margins denticulate; veins prominent, the lateral ones straight. Stipules adnate for about half or two-thirds of their length, ovate, acute, with denticulate margins. Flower-heads terminal and axillary, on stalks exceeding their own length and about as long as the leaves from which they spring, solitary, ovoid-globular. Flowers sub-sessile, not reflexed in fruit. Calyx-tube bell-shaped, 10-ribbed, glabrous, open at the throat, swollen in fruit; teeth triangular, acuminate, sub-spinescent, the four upper about equal to the tube, the lower one exceeding it. At length spreading-recurved. Corolla a little longer than the calyx, shrivelling or deciduous. Pod 2-seeded, a little longer than the calyx-tube. Plant glabrous.

On dry banks. Very rare. It has only occurred at Llandewed-nach, on old Lizard Head, Cornwall. It has also been reported from Anglesea, by Dr. Dickenson, who found it "on a wild, uncultivated heath, about three miles north of Aberffraw, Anglesea, nearly in the centre of the island, in abundance, covering a space of 50 yards square, and to all appearance undoubtedly indigenous." —(*Bot. Gazette*, Vol. I. p. 28.) It also occurs in the Channel Islands.

England. Annual. Early Summer.

Stems 1 to 6 inches high in the Cornwall and Channel Islands specimens, but sometimes 1 foot high or even more in Continental ones. Leaflets of the upper leaves $\frac{1}{2}$ to 1 inch long, much narrower

than in the preceding species. Heads $\frac{1}{4}$ to $\frac{1}{2}$ inch long, on stalks from $\frac{3}{4}$ to 1 inch in length, with a small white membranous frill-like involucre immediately below the flowers, not much exceeding the width of the pedicel. Flowers $\frac{1}{5}$ inch long, pale purplish rose-colour. Calyx very strongly ribbed, with slender almost subulate teeth; standard withering, not retaining its shape. Pod ovoid, swollen, protruding from the calyx-tube. Plant lively green, glabrous.

The more or less upright stems and stalked heads of purplish flowers, with the pods protruding from the swollen ovoid calyces when ripe, at once distinguish this rare species.

Upright Round-headed Trefoil.

French, *Trèfle Raide*.

SPECIES XV.—**TRIFOLIUM HYBRIDUM.** Linn.

PLATE CCCLXI.

Rootstock many-headed. Stems erect, or decumbent only at the base, not rooting at the nodes, branched. Lower leaves on long upper ones on short stalks; leaflets oval or obovate, rounded at the apex, finely denticulate at the margins. Stipules oblong, adnate for less than half their length, with the free portion narrowly triangular. Flower-heads all axillary, on stalks much exceeding their own length and longer than the leaves from which they spring, solitary, depressed-globular. Flowers on pedicels as long as or longer than the calyx, reflexed after flowering. Calyx-tube bell-shaped, bulging at the base on the upper side, faintly nerved; teeth nearly equal, subulate, about as long as the tube, unaltered in fruit. Corolla more than twice as long as the calyx, becoming scarious and striate when covering the pod. Pod 2- to 4-seeded, longer than the calyx-teeth. Plant sub-glabrous.

Var. α, genuina.

T. hybridum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 192. Gr. & Godr. Fl. de Fr. Vol. I. p. 420.

Stems stout, hollow. Stipules few-nerved. Heads of flowers large.

Var. β, elegans.

T. elegans, Sav. Koch (!), Syn. Fl. Germ. et Helv. ed. ii. p. 193. Gr. & Godr. Fl. de Fr. Vol. I. p. 420.

Stem weak, decumbent at the base, solid. Stipules several-nerved. Leaves more sharply denticulate, and heads of flowers smaller than in var. α.

In fields and by roadsides. Var. α perfectly naturalized near Saffron Walden, Essex; var. β in clover-fields about Moulsey, Chessington, and Claygate, in Surrey, but not permanent in these localities. Both are occasionally found throughout the country, either introduced with clover-seed, or the remains of a crop sown for fodder.

[England.] Perennial. Summer and Autumn.

Stem 9 inches to 2 feet high, branched, flexuous. Leaves of the radical tufts and base of the stem on petioles often 3 or 4 inches long. Leaflets $\frac{3}{4}$ to $1\frac{1}{4}$ inch long, with the lateral veins excurrent, forming more or less projecting teeth. Stipules herbaceous towards the apex, but white with green veins towards the base. Peduncles from the axils of the upper leaves, commonly 2 to 4 inches long. Flower-heads $\frac{3}{4}$ to 1 inch across, becoming much flattened on the upper side by the bending down of the flowers after flowering, when the elongate arched pedicels become visible at the apex of the head. Flowers about $\frac{3}{8}$ inch long, whitish, tinged with pale rose. Calyx somewhat membranous, whitish, with the teeth green, the upper teeth a little longer than the others. Corolla with the standard folded down over the fruit, retaining its shape but turning brown and membranous, striated. Pods ovoid, obtuse at the apex, compressed, not bossulated. Seeds flattened, and notched at the hilum. Plant bright-green, with the leaflets having often a white mark in the centre. Stems and peduncles with a few adpressed hairs, but otherwise the plant is glabrous.

I fully concur in Mr. Baker's remark in his "Flora of North Yorkshire," that *T. hybridum* and *T. elegans* cannot be specifically distinguished; neither the British nor the German and Scandinavian specimens which I have received under these names show any greater difference than that between the cultivated and wild forms of the Red Clover, yet Continental authors are so generally agreed as to the existence of two species, that I suspect there must be a "*T. elegans*," of which no examples have come under my notice.

Alsike Clover.

French, *Trèfle Hybride*. German, *Bastard Klee*.

Sometimes cultivated in this country, but much less generally than the Red Clover.

SPECIES XVI.—*TRIFOLIUM REPENS*. Linn.

PLATE CCCLXII.

Rootstock branched. Stems prostrate, rooting at the nodes, the extremities sometimes ascending. Leaves on long stalks; leaflets oval or obovate, rounded or slightly notched at the apex, sharply

denticulate at the margins, with rather prominent veins. Stipules adnate for about half their length, oblong, with the free portion lanceolate, abruptly acuminate into a short point. Flower-heads all axillary, on stalks much exceeding their own length and longer than the leaves from which they spring, solitary, depressed-globular, lax. External bracts forming an imperfect involucre shorter than the calyx. Flowers on pedicels which are equal to or rather shorter than the calyx, reflexed after flowering. Calyx-tube bell-shaped, bulging at the base on the upper side, rather faintly nerved; teeth triangular-subulate, the upper ones equal to the calyx-tube, the others a little shorter, unaltered in fruit. Corolla more than twice as long as the calyx, becoming scarious and striate when covering the pod. Pod 3- to 6-seeded, longer than the calyx-teeth. Plant sub-glabrous.

In meadows, pastures, and waste places. Very common and generally distributed.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Rootstock passing gradually into the creeping stems, which vary from a few inches to 1 foot or more in length. Leaflets varying much in size in different localities, being from $\frac{1}{4}$ to 1 inch long. Peduncles rising more or less vertically upwards, from $1\frac{1}{2}$ to 8 inches long. Flower-heads $\frac{3}{4}$ to $1\frac{1}{4}$ inch across, resembling those of *T. hybridum*. Flowers $\frac{3}{8}$ to $\frac{1}{2}$ inch long, white tinged with rose, but frequently without any rosy tinge. The standard after flowering becomes brown, and retains its shape as in the last species. The pod is rather narrower and bossulated or marked by the seeds. Seeds globular, compressed, notched at the hilum, generally 4 in number. Plant bright-green, glabrous. Leaflets commonly with a white mark.

In a striking variety found by Mr. Townsend in the island of Treseo, Scilly, figured in the "*Journal of Botany*," Vol. II. p. 1, the flowers are suffused with bright lilac-purple.

White Clover, Dutch Clover.

French, *Trèfle Rampant*. German, *Weiss Klee*.

This pretty little plant is so familiar to us all, that it appears almost like a spontaneous product of the soil, and so rapidly and constantly does it spring up, that Withering says, "On the soil of our moors in the North of England being turned up for the first time, and lime applied, White Clover appears in abundance, a circumstance in no way satisfactorily accounted for, but which is known to take place both in Britain and North America." In such situations, doubtless, the seed may have lain dormant for a length of time, until stimulated into vegetation by the admission of moisture and heat. The plant is perennial, and bears its dense clusters of white blossoms all the

summer. In rich soils it grows a foot or two in height, but varies greatly in luxuriance according to the situation, and is only an inch or less above the surface of the ground, becoming almost woven in with the thick short grass that forms the natural carpet of our downs and commons. Its chief value in cultivation is as a pasture plant; and so quickly does it grow that Mr. Curtis affirms that a single seedling covered more than a square yard of ground in a single summer. It does not seem to be ascertained when White Clover or Trefoil first became cultivated in this country, but it appears to have been of late date, for it is not mentioned by Gerarde, Parkinson, or Ray as an agricultural plant in this country, nor by any of the writers of the 17th century. Gerarde, however, says that "there is a Trefoil of this kind which is sown in fields of the low countries in Italy, and divers other places beyond the seas, that comes up ranker and higher than that which groweth in meadows, and is an excellent food for cattell, both to fatten them and cause them to give good store of milk." Sheep thrive well upon this little plant, and there are seldom any moors or meadows where it is not to be found. Even in the midst of London fogs and dark December weather we have discovered this little plant of the way-side, nestling under the shadow of a wall in a city garden, waiting for the warm days of spring to beam forth, invigorating its tiny leaves, and bringing forth its little white blossoms, which are then in unseen preparation.

The common plants of a country are almost universally associated with its songs and legends. The Irish names for *Trifolium repens* are Shamrock, Shamrog, or Sea Muroge; and some botanists claim for it priority as the national emblem of Ireland. Some contend for the *Oxalis acetosella* (wood sorrel); while others maintain that the white clover was the favoured plant of St. Patrick, who when he was preaching the Gospel in the earliest times to the benighted inhabitants of the Emerald Isle, chose to illustrate the great doctrine of the Trinity by the simple instance of a triane nature in this well-known and beautiful leaf. We incline, as we have expressed before when writing of the *Oxalis*, to believe that it was this plant, and not the White Clover, which was the original Trefoil of Ireland; for our little plant does not arrive at perfection until considerably after St. Patrick's Day. The national emblem and the spirit of the institution is, however, equally preserved in either plant, and we may take the term Shamrock as applicable to all trefoils or threeparted-leaved plants. The "Irish Hudibras" says—

"Within a wood near to this place
There grows a bunch of three-leaved grass,
Called by the boglanders sham rogues,
A present for the queen of shoges" (spirits).

In all ages a sort of mystic reverence has surrounded the notion of a Trinity, and this idea seems embodied by the imaginative and poetical Irish in the triple leaflet. Whenever this sacred leaf is found to depart from its usual form and to produce four leaflets, its mystic power is said to be greatly enhanced, and all sorts of spells are supposed to be worked with its enchantments. The old song—

"I'll seek a four-leaved shamrock in all the fairy dells,"

tells of the wonders to be accomplished by it when found.

The White Clover forms a very interesting study in itself as the type of the family to which it belongs. No class of plants affords such evident and interesting examples of the law of morphology as do the Leguminosæ. In the White Clover we frequently meet with cases in which parts of the flower exhibit a tendency to return to their leafy origin; the pod frequently changes into a small leaf, whilst the stamens, petals, and

sepals all exhibit the same tendency, the pedicels of the flowers at the same time elongating. We have seen many specimens where the whole head of flowers on a stalk of Clover has undergone this transformation, presenting the most singular appearance possible, with the green leaves looking as if quite out of their accustomed place, and consequently very odd and uncomfortable. In passing through a field of Clover, it is worth while to look for such monstrosities; and they are by no means uncommon. We may mention some interesting observations and drawings made by Mrs. Godwin Austen on this subject, first exhibited at the meeting of the British Association in 1849, and afterwards published in Henfrey's "Botanical Gazette" for March, 1850. It was a happy idea of the great German poet-botanist Goethe to reduce the previously received and complicated theory of plant-structure to the simple formula of leaf-formation. In this way everything presented itself to him under a different aspect; what had been considered essential became accidental, and *vice versa*. In all the higher plants, foliage, flowers, and fruit were formerly regarded as essentially different parts. It was Goethe who first recognized in the flower and fruit the recurrence of the foliage, so that there is no essential difference between these three parts of a plant. In studying this subject somewhat carefully, it becomes evident that it is the leaf which in its Protean capability of transformation gradually assumes the form of fruit or flower. These are truly leaves—whorls of leaves differing in character and position from other leaves, although not in their essential nature. This great doctrine of unity of plan in creation was first demonstrated and successfully taught in relation to the vegetable kingdom, and has since been clearly worked out and adopted by the ablest comparative anatomists of this and other countries as applied to higher organisms, and even to man himself. The susceptibility of the little Trifolium to the withdrawal of light, and its habit of closing its leaves somewhat on the approach of night, remind us of its family relationship to the group of sensitive plants. The observation of the older botanists led them to record this curious fact; and Gerarde tells us that "Pliny writeth and setteth it down for certaine that the leaves hereof do tremble and stand right up against the coming of a storme or tempest."

While examining the tissue of the stems of this plant under the microscope, the abundance of spiral fibre suggested the thought that this very elastic and delicate material might possibly have something to do with the hitherto unexplained cause of the curious movements of the sensitive plants.

Microscopic research in skilful hands will do much to clear up these unsolved questions.

SECTION IV.—FRAGIFERA. *Koch.*

Heads of flowers all axillary, stalked or sessile, sub-globose. Flowers numerous, sub-sessile; pedicels with bracts at the base. Calyx more or less distinctly 2-lipped, the upper portion enlarging and becoming vesicular or inflated, membranous and reticulated in fruit, without a callous or hairy ring at the throat; teeth equal, the uppermost pair at length exceeding the others. Corolla marcescent, purple, rose, or white; standard shrivelling, not striated, sometimes deciduous. Pod sessile within the calyx, included, 1- or 2-seeded.

SPECIES XVII.—**TRIFOLIUM FRAGIFERUM.** *Linn.*

PLATE CCCLXIII.

Rootstock branched. Stems prostrate, rooting at the nodes, the extremities sometimes ascending. Leaves on rather long stalks. Leaflets oval or obovate, rounded or slightly notched at the points, denticulated at the margins, with prominent veins. Stipules adnate for less than half their length, oblong, with the free portion triangular, gradually acuminate into a long subulate point. Flower-heads all axillary, on stalks much exceeding their own length, and longer than the leaves from which they spring, solitary, globular-depressed, at length spherical and very dense. External bracts lanceolate, acute, forming a distinct involucre about as long as the calyces. Flowers scarcely stalked, slightly reflexed after flowering. Calyx-tube in flower oblong, striate, downy above, with the teeth subulate-setaceous, nearly equal, and about as long as the tube; in fruit having the upper portion very much swollen and becoming convex, with the convexity greatest near the apex, reticulated, membranous, and carrying forward the two projecting upper teeth so that they much exceed the lower. Corolla not turned upside down, not twice as long as the calyx, shrivelling. Plant sub-glabrous.

In moist meadows and by the sides of ditches, and on commons. Frequent and generally distributed in England; rare in Scotland, where it has only been observed in Haddingtonshire and Fifeshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

When in flower, this species is extremely like small specimens of *T. repens*, these two being the only British species which have rooting stems. In the present species the flower-heads are smaller, seldom $\frac{1}{2}$ inch across, and have the bracts at the base forming a distinct involucre, by which the species may be easily recognized in this state. The flowers are also smaller, about $\frac{1}{4}$ inch long, pale purplish-rose, with the calyx much longer in proportion, with longer teeth, and downy on the back. In fruit this plant cannot be mistaken for any other; the fruiting-heads are $\frac{3}{4}$ inch across, with the calyces enormously enlarged in the portion which represents the 2 upper sepals, while that which corresponds with the 3 lower ones remains nearly unaltered; the upper part becomes $\frac{3}{8}$ inch long, half pear-shaped, enlarging gradually from the base to near the apex, where it again rapidly contracts to the base of the upper teeth, which are thus carried out far beyond the lower ones: this upper portion is also strongly net-veined, and having usually a

reddish tinge, has been supposed to bear some resemblance to a strawberry. The pod is small, completely enclosed in the calyx, ovoid, compressed, usually containing only one or two brownish seeds, which are ovate-ovoid, compressed, truncate or slightly notched at the hilum. Plant pale-green, glabrous, or with a few scattered hairs, but with the upper portion of the calyx always downy.

Strawberry-headed Trefoil.

French, *Trèfle Fraisièr.* German, *Erdbeek Klee.*

SPECIES XVIII.—**TRIFOLIUM RESUPINATUM.** Linn.

PLATE CCCLXIV.

Rootstock none. Stems procumbent or ascending, not rooting at the nodes. Leaves on short stalks; leaflets oblanceolate or obovate, rounded or truncate at the apex, sharply denticulate on the margins, with rather prominent veins. Stipules adnate for less than half their length, half-ovate, with the free portion lanceolate, gradually acuminate. Flower-heads all axillary, on stalks exceeding their own length, and at length exceeding the leaves from which they spring, solitary, globular-depressed, at length spherical and rather dense. External bracts truncate, forming a very small involucre, about one-tenth the length of the calyces. Flowers indistinctly stalked. Calyx-tube in flower oblong, striate, downy at the base of the upper teeth; the 2 upper teeth setaceous, longer than the calyx-tube, the 3 lower ones subulate, about equal to it; in fruit having the upper portion very much enlarged, becoming convex with a conical apex, reticulated, membranous, and carrying forward the 2 divaricate projecting teeth so that they much exceed the lower. Corolla more than twice as long as the calyx, twisted round within it, so that the standard becomes the lowest petal, shrivelling. Plant glabrous.

By roadsides and in waste places. Appearing occasionally, but not native or permanent in its stations. It has been found abundantly in Lancashire, near Liverpool. I have myself seen it plentifully at Gipsy Hill, Norwood.

[England.] Annual. Summer.

Stems numerous, 6 inches to 2 feet long. Peduncles variable in length. Flower-heads $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, becoming $\frac{1}{2}$ to $\frac{3}{4}$ inch in fruit, when they have a general resemblance to those of *T. fragiferum*; but the inflated calyces are widest about or a little below the middle, so that the conical ends are separate from each

other, and the heads look much less compact than those of the Strawberry Trefoil. The flowers are about $\frac{1}{4}$ inch long, pale bluish-purple. Pod extremely short, globular, 2-seeded.

The curious twist of the corolla, which brings the standard below the keel, at once distinguishes this plant when in flower from all the other British species, while by the reticulated and inflated calyces with their apices all separate from each other, it may be equally well known in fruit.

Reversed-flowered Trefoil.

French, *Trèfle Renversé*.

SECTION V.—CHRONOSEMIUM. *D. C.*

Flower-heads axillary and terminal or all axillary, sub-globose, becoming ovoid. Flowers sessile or shortly stalked. Pedicels with bracts at the base. Calyx not becoming vesicular in fruit, without a callous or hairy ring in the throat; the teeth equal, or the 2 upper ones shorter, remaining unchanged in fruit. Corolla yellow; standard becoming enlarged and scarious, folded (at least at the base), and bent down at the tip over the fruit. Pod stalked within the calyx, exserted, 1-seeded, more rarely 2-seeded. Leaves frequently pinnately trifoliate.

SPECIES XIX.—**TRIFOLIUM PROCUMBENS.** *Linn.*

PLATE CCCLXV.

Bab. Man. Brit. Bot. ed. v. p. 80. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 194. Fries Sum. Veg. Scand. p. 48. Lowe, Man. Fl. Mad. p. 150. T. agrarium, Huds. Benth. Handbook Brit. Bot. p. 169. Hook. & Arn. Brit. Fl. ed. viii. p. 105. Gr. & Godr. Fl. de Fr. Vol. I. p. 423 (non Linn. Herb.!).

Rootstock none. Stems several, slender, wiry, erect or ascending, or procumbent, branched. Leaves shortly stalked, pinnately trifoliate; leaflets obovate or oblanceolate, usually truncate or emarginate at the apex, finely denticulate in the upper portion. Stipules adnate for about half their length, half-ovate, rounded at the base; the free portion deltoid, triangular-acute, entire. Flower-heads axillary, on stalks exceeding their own length, and usually (but not always) longer than the leaves from which they spring, globular, at length ovoid or oblong, very dense, many-flowered. Flowers on pedicels shorter than the calyx-tube, at length reflexed. Calyx-tube bell-shaped; upper teeth triangular, shorter than the tube, the 3 lower ones lanceolate and exceeding it, unaltered in fruit. Corolla longer than the calyx; standard broadly obovate,

much enlarged and deeply ribbed in fruit, considerably longer than the wings and keel, not folded longitudinally except at the base, not keeled on the back, arched or bent down at the apex over the pod. Pod much narrower and much shorter than the standard. Style not half the length of the pod.

In fields, pastures, roadsides, and waste places. Very common, and generally distributed.

England, Scotland, Ireland. Annual. Spring to Autumn.

Stems numerous, rarely solitary, the central one erect, the lateral ones and the branches more or less decumbent or even procumbent, 3 to 15 inches long. Leaves on short stalks; leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, the central one inserted higher up on the common petiole than the lateral ones, an arrangement which rarely occurs in this genus. Peduncles $\frac{1}{4}$ to $1\frac{1}{4}$ inch long. Heads $\frac{3}{8}$ inch across in flower, but sometimes nearly $\frac{1}{2}$ inch when in fruit. Flowers 20 to 40 in each head, $\frac{1}{8}$ inch long, lemon-yellow, reflexed and yellowish-brown after flowering, the lowest ones almost sessile, the upper ones shortly pedicellate; standard becoming about $\frac{1}{4}$ inch long, not folded together as in most of its allies, spoon-shaped, very much broader than the pod. Pod elliptical-ovoid, the style about one-quarter the length of the pod, hooked. Seed oval-ovoid, yellowish, shining. Brotero, as quoted by the Rev. Mr. Lowe, says the seeds are mostly 2, but I have not found more than 1 in the British specimens I have examined. Plant rather dull-green, the leaves somewhat firm, glabrous or sub-glabrous. Stems, stipules, and peduncles generally more or less thickly clothed with adpressed curled hairs.

This species is named *T. procumbens* in the Linnæan Herbarium. The plant there named *T. agrarium* is the plant so called in Koch's Synopsis.*

Hop Trefoil.

French, *Trèfle Couché*. German, *Niederliegender Klee*.

This is a common plant in dry fields and by the wayside, and is sometimes sown for fodder, either by itself or more usually with white clover. It varies much in luxuriance of growth, being rarely more than a few inches high in the wild state; but when cultivated it often equals the Dutch clover in size. All cattle seem fond of it, and with the white clover it may be advantageously grown, but seldom yields a good crop by itself; it will, however, flourish on very poor soils.

* MM. Soyer-Willemet and Godron, in their "Revue des Trèfles de la Section Chronosemium," contend that this is the *T. agrarium* of Linnaeus. It may be so of the "Species Plantarum," but is certainly not of the Linnæan Herbarium. It is the fashion with many botanists (especially those who have not the opportunity of con-

SPECIES XX.—TRIFOLIUM MINUS. *Relhan.*

PLATE CCCLXVI.

Bab. Man. Brit. Bot. ed. v. p. 80. Lowe, Man. Fl. Mad. p. 152.

T. procumbens, Huds. Benth. Handbook Brit. Fl. p. 170. Hook. & Arn. Brit. Fl. ed. viii. p. 106. Gr. & Godr. Fl. de Fr. Vol. I. p. 423 (non Linn. Herb.!).

T. filiforme, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 195. Fries, Sum. Veg. Scand. p. 48 (non Linn. Herb.!).

Rootstock none. Stems several, slender, wiry, ascending or procumbent, branched. Leaves shortly stalked, generally pinnately trifoliate; leaflets obovate or oblanceolate, generally truncate or notched at the apex, finely denticulate in the upper portion. Stipules adnate for less than half their length, half-ovate, rounded at the base, the free portion ovate-triangular, abruptly acuminate. Flower-heads axillary, on stalks which exceed their own length, and are usually longer than the leaves from which they spring, sub-globular, somewhat lax, many- or few-flowered. Flowers on pedicels which are nearly as long as the calyx-tube, at length reflexed. Calyx-tube bell-shaped; upper teeth triangular, shorter than the tube; lower teeth subulate, exceeding it; all unaltered in fruit. Corolla longer than the calyx; standard broadly oblanceolate, slightly enlarged and faintly ribbed in fruit, a little exceeding the wings and keel, folded together longitudinally over the pod, keeled on the back. Pod as broad as and not much shorter than the standard. Style not a quarter the length of the pod.

In fields, pastures, waste places, and by roadsides. Very

sulting the Herbarium) to undervalue it as the standard by which nomenclature is to be settled; but when we consider that the species can be determined by observation from the Herbarium, and only by inference from imperfect data from the writings of an author, there surely ought to be no hesitation in preferring the sure to the uncertain. It must be kept in view that when an author has confounded species manifestly distinct, it is of no consequence what form retains the name he has given to the composite species, provided that uniformity of nomenclature be attained; and this is much more likely to be arrived at by referring to a specimen than to a meagre and imperfect description, or references (possibly erroneously quoted) to other descriptions as meagre and imperfect, or to ill-executed plates. M. Soyer-Willemet goes the length of saying that he considers there is confusion in the Linnean Herbarium; by which I suppose he wishes it to be understood that the labels may have been crossed; but if this be his meaning, he cannot be aware that the species are pasted to sheets of paper, and the name written on the sheet itself by Linnæus' own hand.

common, and generally distributed. Like the last species, it becomes rarer in the North of Scotland.

England, Scotland, Ireland. Annual. Spring to Autumn.

This plant is not unlike *T. procumbens*, but generally smaller in all its parts; the leaves of a blue-green, and sometimes not so distinctly pinnately trifoliate; the flower-heads are also smaller, not having more than 20, and sometimes only 4 flowers. Flowers smaller, deeper yellow, changing to dark brown, not so closely packed, and appearing still less so from the sides of the standard being folded together. The pod shows slightly when full grown, and the style is shorter.

T. minus in the Linnæan Herbarium has no name on the sheet, but is pinned to the named sheet of *T. procumbens*, though whether by Linnaeus himself or not must of course be uncertain.

Lesser Yellow Trefoil.

SPECIES XXI.—**TRIFOLIUM FILIFORME.** *Linn.*

PLATE CCCLXVII.

Bab. Man. Brit. Bot. ed. v. p. 80. Benth. Handbook Brit. Fl. p. 170. Hook. & Arn.

Brit. Fl. ed. viii. p. 106. Gr. & Godr. Fl. de Fr. Vol. I. p. 422.

T. micranthum, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 195.

Rootstock none. Stems several, procumbent or prostrate, branched. Leaves very shortly stalked, palmately trifoliate; leaflets wedge-shaped, obovate or oblanceolate, truncate and denticulate at the apex. Stipules adnate for less than half their length, the free portion ovate, abruptly acuminate. Flower-heads axillary, on stalks which exceed their own length, and are usually longer than the leaves from which they spring, very lax, few-flowered. Flowers on pedicels which are longer than the calyx-tube, at length spreading or slightly reflexed. Calyx-tube bell-shaped; upper teeth triangular-subulate, shorter than the calyx-tube; lower teeth more slender, about equal to it; unaltered in fruit. Corolla longer than the calyx; standard narrowly oblanceolate, slightly enlarged, and very indistinctly ribbed in fruit, a little exceeding the wings and keel, folded together longitudinally over the pod, keeled on the back. Pod considerably broader than and about as long as the standard. Style one-sixth the length of the pod.

On commons, dry pastures, and waste places. Rare, or generally overlooked. Specimens have been sent me from the counties of Cornwall, Hants, Kent, Surrey, Oxford, and Cardigan, also from

Dublin. I have never seen this species in Scotland, though I have often looked carefully for it.

England, Scotland? Ireland. Annual. Spring to Autumn.

Extremely like small slender forms of the last species, but with the leaves more shortly stalked, and the central leaflet not inserted higher on the common petiole than the lateral ones. The flower-heads are much more lax, 2- to 7-flowered; the flowers smaller, much more distinctly stalked, and more evidently racemose, less reflexed after flowering; the standard much narrower, with its sides not reaching down to the middle of the pod, which is more obovate and with a shorter style.

This is *T. filiforme* of the Linnæan Herbarium.

Least Yellow Trefoil.

French, *Trèfle Filiforme*. German, *Fadenförmiger Klee*.

This little species of Trefoil abounds in dry pastures, especially on sandy or calcareous soils, and often forms a considerable portion of the turf in those places. It is extremely nutritive, and must therefore be considered as a useful pasture plant, though too small to be worth cultivating separately. Like the hop trefoil, it is an annual. Cattle and sheep are so fond of it, that a specimen can scarcely be had in any pasture to which they have access.

SUB-TRIBE IV.—EU-LOTEÆ.

Stamens diadelphous, the upper one being free from the other nine. Pod with incomplete spurious transverse partitions between the seeds. Leaves trifoliate, with entire margins and no excurrent nerves.

GENUS X.—LOTUS. *Linn.*

Calyx bell-shaped, 5-toothed; teeth narrow, elongate, nearly equal. Corolla deciduous; standard obovate-roundish, spreading, longer than the wings and keel; wings connivent and contiguous at the upper edges; keel with an acuminate beak directed towards the standard. Stamens diadelphous; filaments unequal, the alternate ones longer and dilated at the apex. Style attenuated towards the summit, simple, glabrous. Pod more or less exserted, cylindrical, with imperfect cellular partitions between the numerous seeds, opening by two valves, which afterwards generally twist spirally on their own axis.

Herbs or under-shrubs, with trifoliate leaves; leaflets with entire

margins. Stipules free, resembling the leaflets; peduncles axillary, with umbellate heads of few or numerous flowers, which are generally yellow. The pods show an evident relation to the Coronilleæ.

The name of this genus is variously derived. Some authors say it is of Egyptian origin, others that it is the *λωτος* of Theophrastus and Dioscorides; the true *Lotus* is, however, the *Zizyphus Lotos*. In mythology, *Lotos* was a nymph turned into a tree to avoid the pursuit of Priapus, and it is most probable that the name was originally given to a tree of large size.

SPECIES I.—*LOTUS CORNICULATUS*. *Linn.*

PLATES CCCLXVIII. CCCLXIX.

Rootstock short, caespitously branched, emitting few or no stolons. Stems decumbent, simple or branched. Peduncles three to five times as long as the leaves. Heads 3- to 10-flowered. Calyx-teeth nearly equal, erect in the bud; the 2 uppermost triangular, converging, separated by a blunt sinus, the 3 lower triangular contracted into subulate, rather shorter than the tube. Corolla twice as long as the calyx or more; standard with the claw dilated and vaulted near the middle, rather abruptly widening into the lamina. Pod cylindrical, slightly depressed and not beaded when ripe.

SUB-SPECIES I.—*Lotus eu-corniculatus*.

PLATE CCCLXVIII.

L. corniculatus, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 197. *Fries*, Sum. Veg. Scand. p. 47. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 432.

L. corniculatus, vars. *b* and *c*, *Benth.* Handbook Brit. Bot. p. 171.

L. corniculatus, vars. *α* and *β*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 106.

L. corniculatus, vars. *α*, *β*, and *γ*, *Bab. Man.* Brit. Bot. ed. v. pp. 80, 81.

Stems short, rather stout, nearly simple. Leaflets oblanceolate or obovate, rather obtuse. Stipules ovate or lanceolate. Wings oblong-obovate, nearly straight on the upper margin, curved on the lower margin of the lamina from the middle to the apex.

Var. *α*, *vulgaris*.

Nearly glabrous. Leaflets thin.

Var. *β*, *crassifolius*.

Sub-glabrous. Leaflets thick and fleshy.

Var. *γ*, *villosus*.

Stem, leaves, and calyces with numerous long spreading hairs.

In pastures, heaths, and waste places. Var. α very common, and generally distributed; var. β near the sea; var. γ reported from the Isle of Wight, Higham and Sandgate, Kent, and Budleigh Salterton, Devon, but of this I have seen no British specimens.

England, Scotland, Ireland. Perennial. Summer.

Taproot very long. Rootstock producing a few subterranean stolons and dividing into numerous branches, nearly all of which spring from the same point. Stems very numerous, spreading in a circle so as to form roundish tufts, ascending from a curved prostrate base, 3 to 12 inches long. Leaves shortly stalked, pinnately trifoliate; leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, wedge-shaped at the base, rounded at the apex, entire. Stipules ovate, often acute, as large as the leaflets, sub-sessile. Peduncles axillary, 2 to 4 inches long. Flower-heads with a 3-foliate bract at the base. Flowers $\frac{5}{8}$ to $\frac{3}{4}$ inch long, bright yellow, streaked and often tinged with crimson, especially when in bud, turning greenish in drying, on short pedicels, spreading in a lax umbellate head. Calyx-tube funnel-shaped, 10-nerved at the base, but only those which form the midribs of the teeth extending to the apex; 2 upper teeth triangular, the rest subulate from a triangular base. Standard with an orbicular spreading-reflexed lamina; claw dilated and arched a little below its junction with the lamina; keel with a long acuminate beak directed towards the standard. Pods spreading horizontally, $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, brown when ripe, faintly channelled along the upper suture, keeled beneath. Seeds numerous, blackish-brown, nearly smooth, sub-orbicular, with a small circular hilum. Valves of the pod twisting on their own axis and remaining attached at the base. Plant bright-green, slightly glaucous, varying from glabrous to hairy.

Common Birds-foot Trefoil.

French, *Lotier Corniculé*. German, *Gemeiner Hornklee*.

We must all be able to recall this pretty little plant with its bright yellow flowers, as forming part of the soft carpeting of almost every down and meadow-land we have trodden. So small does it become in its dwarf state on commons and heaths, that it appears almost as if the flowers spring out of the ground without a stalk; but in more favourable positions it attains a considerable amount of dignity, and waves in the wind on a stem of its own of some length. It is not to be despised in pasturage for sheep, and in hay it is an improvement; but it has been strongly recommended by Anderson both for fodder and hay in his agricultural essays, under the erroneous name of Milk Vetch.

The common vulgar names of this little plant are numerous. Amongst them we find it called Butter-jags, Shoes-and-Stockings, Ladies Slipper, Cross-toes, Crow-toes, and in Yorkshire Cheesecake-grass.

SUB-SPECIES II.—*Lotus tenuis*. *Kütz*

PLATE CCCLXIX.

Hook. & Borr. in Eng. Bot. Sup. No. 2615. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 432.

L. tenuifolius, *Reich.* Fl. Excurs. p. 506. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 197

Fries, Sum. Veg. Scand. p. 47.

L. corniculatus, var. *tenuis*, *Benth.* Handbook Brit. Fl. p. 171. *Bab. Man.* Brit. Bot. ed. v. p. 81.

L. corniculatus, var. *tenuifolius*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 106.

L. decumbens, *Forst. Sm.* Eng. Fl. Vol. III. p. 314.

Stems elongated, slender, wiry, much branched. Leaflets acute, those of the lower leaves oblanceolate-elliptical, of the upper oblanceolate-linear. Lower stipules strapshaped-lanceolate, upper ones linear-lanceolate. Wings oblong-oblanceolate, curved on the lower margin of the lamina only at the apex.

In meadows and waste places, especially on damp or clayey soils. Rather rare, but pretty generally distributed in England; rare in Scotland, where it has been found in Linlithgowshire, Forfarshire, and Kincardineshire. It is not marked in Dr. Moore's Irish list.

England, Scotland. Perennial. Summer.

This plant certainly comes very near to *L. eu-corniculatus*, but all the botanists who have cultivated it have found its peculiarities constant. The stems are more wiry and slender, much longer (sometimes between 2 and 3 feet long), and much more branched; the stolons are more constantly present, the leaves and stipules narrower; the peduncles longer and more slender. The flowers are smaller, $\frac{3}{8}$ to $\frac{1}{2}$ inch long, and usually fewer in number than in *L. eu-corniculatus*, and the curvature on the under margin of their wings is much more abrupt; the keel is less deep; the calyx has always fine hairs, and the teeth rather shorter in proportion to its length. The pods are rather paler coloured, and the seeds a little smaller.

Slender Birds-foot Trefoil.

SPECIES II.—*LOTUS MAJOR*. *Scop.*

PLATE CCCLXX.

Bab. Man. Brit. Bot. ed. v. p. 81. *Hook. & Arn.* Brit. Fl. ed. viii. p. 107. *Sm.* Eng. Bot. No. 2091.

L. uliginosus, *Schkuhr.* *Fries*, Sum. Veg. Scand. p. 47. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 432. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 197. *Reich.* Fl. Excurs. p. 506.

L. corniculatus, var. *a. major*, *Benth.* Handbook Brit. Bot. p. 171.

Rootstock elongated, branched throughout its length, emitting numerous stolons. Stems decumbent or ascending, branched. Peduncles three to seven times as long as the leaves. Heads 3- to 12-flowered. Calyx-teeth nearly equal, spreading in bud, the 2 uppermost triangular diverging, separated by an acute sinus; 3 lower triangular contracted into subulate, rather shorter than the tube. Flowers twice as long as the calyx or more. Standard with the claw not dilated, gradually widening into the lamina. Pod cylindrical and not beaded when ripe.

Var. α, sub-glaber.

Sub-glabrous, with the leaflets ciliated at the margins.

Var. β, hirsutus.

Leaves, stem, peduncles, and calyces with long spreading hairs.

In meadows, marshes, and by the sides of ditches. Common, and generally distributed, but less so than the preceding species.

England, Scotland, Ireland. Perennial. Late Summer.

This species resembles the last, but the mode of growth is different, as the branches are given off at intervals along the rootstock and not all from near the same point, so that the plant does not form dense tufts. The stems are stouter, and generally taller, 1 to 3 feet high. Leaflets obovate, $\frac{1}{2}$ to 1 inch long, rounded or somewhat acute. Stipules ovate, generally shorter than the leaflets, more perfectly sessile than in *L. eu-corniculatus*. Flowers generally more numerous, with the pedicels rather longer, and the calyx-teeth spreading like a star instead of being connivent in bud. Standard with the claw not dilated and bulged into a hump; wings with the curvature commencing near the apex of the lower margin; keel with the beak forming an obtuse and not a right angle with the lower margin of the lamina. Pod less depressed when ripe than that of the last species. Plant deep dull-green, slightly glaucous, varying much in hairiness; but in this country, according to my experience, the sub-glabrous forms occur more frequently than the extremely hairy ones.

Marsh Birds-foot Trefoil.

SPECIES III.—**LOTUS ANGUSTISSIMUS.** *Linn.*

PLATES CCCLXXI. CCCLXXII.

Benth. Handbook Brit. Bot. p. 171. *Hook. & Arn.* Brit. Fl. ed. viii. p. 107.

Rootstock none. Stems several, slightly branched. Peduncles one to three times as long as the leaves. Calyx-teeth nearly

equal, longer than the tube, all subulate. Heads 1- to 4-flowered. Flowers one-quarter longer than the calyx. Pods cylindrical, faintly beaded when ripe.

SUB-SPECIES I.—*Lotus diffusus*. *Sm.*

PLATE CCCLXXI.

Sm. Eng. Bot. No. 925.

L. angustissimus, *Bab. Man. Brit. Bot.* ed. v. p. 81. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 108. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 430.

L. angustissimus, var. *α*, *Benth.* Handbook Brit. Bot. p. 171.

L. angustissimus, var. *α*, minor, *Hook. & Arn.* Brit. Fl. ed. viii. p. 107.

L. gracilis, *Waldst. & Kit.* *Reich.* Fl. Excurs. p. 505.

Stems slender. Flowers usually solitary, and seldom more than 2 together. Wings gradually widening to near the apex. Beak of the keel forming nearly a right angle with the basal portion. Pod slender, four to six times as long as the calyx.

On dry banks and in pastures and waste places. Very rare. On the castle rock at Hastings, Sussex; Stokes Bay, Hants; Maker Heights, &c., Devonshire; more plentiful in the Channel Islands.

England, Ireland (?). Annual. Summer.

Root producing from the crown numerous stems, which are ascending or decumbent, 3 to 18 inches long, with short lateral branches. Leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, elliptical-oblongate, blunt or acute. Stipules ovate, or ovate-lanceolate, subsessile. Peduncles usually a little longer than the leaves, but varying from as long to twice as long when mature. Flower-heads with a trifoliate bract at the base, very frequently reduced to a single flower. Pedicels about as long as the calyx-tube. Flowers $\frac{1}{4}$ inch to $\frac{3}{4}$ inch long, yellow. Calyx-teeth very slender, with long hairs. Pod $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, 15- to 30-seeded. Plant greyish-green, more or less thickly pubescent with slender spreading hairs.

The annual root and sub-solitary small flowers with the calyx-teeth longer than the tube will prevent this plant from being confounded with small hairy states of the two preceding species.

Long-podded Small Birds-foot Trefoil.

French, *Lotier Diffus*.

SUB-SPECIES II.—*Lotus hispidus*. *Desf.*

PLATE CCCLXXII.

Bab. Man. Brit. Bot. ed. v. p. 81. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 431. *Reich.* Fl. Excurs. p. 505.

L. angustissimus, var. *hispidus*. *Benth.* Handbook Brit. Fl. p. 171.

L. angustissimus, β major. *Hook. & Arn.* Brit. Fl. ed. viii. p. 107.

Stems moderately stout. Flowers usually in pairs, or three together. Wings tapering to the apex in the last quarter of their length. Beak of the keel forming a little more than a right angle with the basal portion. Pod two to three times as long as the calyx.

On dry banks and in pastures and waste places. Very rare. Near Penzance, the Land's End, and the Lizard Lights, Cornwall; Maker Heights and Dartmouth, Devon; plentiful in the Channel Islands.

England. Annual. Summer.

Extremely like the preceding, of which I suspect it to be no more than a variety. It is usually, however, a stouter and larger plant (I have seen it in Guernsey with the stems as much as 3 feet long), with the flowers usually in pairs or threes, instead of solitary, and the pod is shorter and thicker, being from $\frac{1}{2}$ to $\frac{3}{4}$ inch long. The beak at the apex of the pod is equally bent down in both, and the standard occasionally turns green in both, but most frequently retains its yellow colour when dried, so that these two characters which have been enumerated as specific differences are evidently valueless for separating the two, and I should certainly expect to find that continued cultivation would prove their identity.

Short-podded Small Birds-foot Trefoil.

French, *Lotier Hispide*.

SUB-TRIBE V.—ASTRAGALEÆ.

Stamens diadelphous, the upper one being free from the other nine. Pod imperfectly 2-celled, from the presence of a longitudinal partition proceeding from one or both of the sutures. Stems herbaceous or suffruticose, sometimes extremely short. Leaves pinnate with an odd terminal leaflet, or, more rarely, with the petiole terminating in a spine; leaflets entire.

GENUS XI.—OXYTROPIS. D. C.

Calyx bell-shaped or tubular, with 5 teeth, the 2 upper somewhat separated from the 3 lower. Corolla with the standard scarcely spreading, as long as or longer than the wings and keel; keel with an apiculus or short appendage at the apex. Stamens diadelphous. Style ascending. Stigma obtuse or subcapitate. Pod ovoid or subclavate, turgid, more or less completely divided into 2 cells by a longitudinal partition, produced by the

inflexion of the upper or ventral suture (that to which the seeds are attached). Seeds numerous.

Herbs, often acaulescent, with the leaves always pinnate, with an odd terminal leaflet. Flowers purple, blue, yellow, white, ochreous, or yellow, in stalked axillary compact racemose heads.

This genus derives its name from the two Greek words *οξύς* (*oxus*), sharp, and *τροπή* (*tropis*), a keel, in reference to the keel of the flower ending in an exserted mucrone on the back of the apex.

SPECIES I.—*OXYTROPIS HALLERI*. *Bunge*.

PLATE CCCLXXIII.

Bab. Man. Brit. Bot. ed. v. p. 81. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 200. Gr. & Godr. Fl. de Fr. Vol. I. p. 449.

O. uralensis, D. C. Benth. Handbook Brit. Fl. p. 174. Hook. & Arn. Brit. Fl. ed. viii. p. 108.

Astragalus uralensis, Sm. Eng. Bot. No. 466.

Rootstock branched, many-headed. Leaves all radical, with numerous pairs of elliptical acute leaflets, densely covered with silky hairs. Scapes erect, longer than the leaves, clothed with spreading hairs. Flowers in a compact oval head, elongating in fruit into a short raceme. Bracts narrowly elliptical-lanceolate, as long as the calyx-tube. Pods erect, inflated, ovoid-cylindrical, tapering and recurved at the apex; upper suture much inflexed, forming an imperfect dissepiment reaching to the central axis of the pod; lower or dorsal suture winged internally, and so forming an imperfect partition, which nearly meets that proceeding from the upper suture.

In hilly pastures. Very local. I have only seen it at Queensferry, in Fifeshire, where the plant is now probably extinct, as in 1848 I saw only one patch, about a foot from the edge of the cliff, where quarrying operations were in active progress. A specimen has also been sent me from Glen Turret, Perthshire. It is also reported as occurring in the counties of Wigton, Forfar, Argyle, Ross, and Sutherland.

Scotland. Perennial. Summer.

Rootstock almost woody, many-headed, each head producing a tuft of leaves 2 to 5 inches long, with 9 to 15 pairs of leaflets and an odd terminal one; leaflets $\frac{1}{4}$ to $\frac{1}{2}$ inch long, varying from strap-shaped-elliptical to oval-elliptical, usually broadest rather below the middle, so as to approach to lanceolate or ovate, very thickly clothed with short silky hairs, which are most abundant on the under side.

Stipules lanceolate, scarious, with a strong central nerve. Scapes 2 to 4 inches high in flower, attaining to 6 inches in fruit, clothed with rather long spreading hairs, bearing 6 to 14 flowers in a compact terminal head. Flowers $\frac{3}{4}$ inch long, purplish-blue, more rarely white. Calyx-tube cylindrical-oblong, splitting as the pod enlarges; teeth linear-lanceolate, about one-fourth the length of the tube; both teeth and tube clothed with rather bristly hairs intermingled with black glandular points. Corolla nearly twice as long as the calyx; keel with a dark purple blotch at the apex. Pods $\frac{5}{8}$ to $\frac{7}{8}$ inch long, sessile, swollen, bending down at the apex, which is acuminate into a point, opening along the upper suture, clothed with short curled hairs. Seeds roundish-kidneyshaped, much compressed, deeply notched at the circular hilum, olive, dim. Plant greyish-green, the young leaves almost white from the abundance of their silky hairs.

I have not seen the Russian plant *O. uralensis*, from which Koch says this species differs. Dr. Walker-Arnott considers them the same. Most probably they are merely sub-species; in which case the name *O. uralensis* might be retained for the aggregate species, and *O. Halleri* for the Western form.

Blue Oxytropis.

SPECIES II.—*OXYTROPIS CAMPESTRIS. D.C.*

PLATE CCCLXXIV.

Astragalus campestris, Linn. Sm. Eng. Bot. No. 2522.

Rootstock branched, many-headed. Leaves all radical, with numerous pairs of elliptical leaflets covered with silky hairs. Scapes ascending, scarcely exceeding the leaves, with spreading hairs. Flowers in a compact globose or oval head, which elongates very slightly in fruit. Bracts narrowly elliptical-lanceolate, longer than the calyx-tube. Pods ascending, inflated, oblong-ovoid, tapering and recurved at the apex; upper suture much inflexed, forming an imperfect dissepiment reaching to the central axis of the pod; lower or dorsal suture not winged, but having merely a ridge projecting into the inside.

On rocks facing the south a little to the north of Bradoonie, Clova, Forfarshire.

Scotland. Perennial. Summer.

Extremely similar to *O. Halleri*, but usually a larger and stouter plant, the leaflets being from $\frac{1}{4}$ to 1 inch long, usually broader in proportion and less acute, with the silky hairs more distant, especially on the upper surface. Scapes 4 to 8 inches high, usually curved towards the base. Flower-heads rather shorter than those

of the last species, with from 6 to 10 flowers, which are rather larger, cream-colour tinged with very pale pinkish-lilac, with a purple blotch at the apex of the keel on the upper margin, leaving the apiculus which characterizes the genus ochreous. Pods $\frac{3}{4}$ to 1 inch long, more inflated than those of the preceding species, without the imperfect dissepiment proceeding from the lower suture. Seeds maroon-coloured, but in other respects very similar.

On the Continent this plant occurs with entirely ochreous flowers, and also another variety, *cærulea*, in which the flowers are almost entirely bluish-purple. The British form belongs to the variety *sordida*.

Pale-yellow Oxytropis.

French, *Oxytropis des Alpes*. German, *Behaarte Fahnwicke*.

GENUS XII.—ASTRAGALUS. Linn.

Calyx bell-shaped or tubular, with 5 teeth; the 2 upper somewhat separated from the 3 lower. Corolla with the standard scarcely spreading, as long as or longer than the wings and keel; keel obtuse, without an apiculus. Stamens diadelphous. Style ascending. Stigma obtuse or sub-capitate. Pod varying in shape, tumid, more or less completely divided into 2 cells by a longitudinal partition proceeding from the lower or dorsal suture. Seeds few or numerous.

Herbs or undershrubs of various habit, but with the leaves pinnate, with numerous pairs of pinnæ and generally an odd terminal leaflet, more rarely with the petiole excurrent and leafless but never terminating in a tendril. Flowers in terminal and axillary racemes spikes or heads, more rarely solitary or in pairs, purple, blue, white, ochreous, or yellow.

The name of this genus of plants is derived from the Greek word *αστραγαλος*, the vertebra, applied by Dioscorides to some leguminiferous plant, the knotted rootstock of which resembled a backbone. Some writers say the derivation is from *αστηρ* (*aster*), a star, and *γαλα* (*gala*), milk.

SPECIES I.—ASTRAGALUS ALPINUS. Linn.

PLATE CCCLXXV.

Phaca astragalina, D. C. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 200. Gr. & Godr. Fl. de Fr. Vol. I. p. 452.

Rootstock slender, creeping, much branched. Stems short, slender, decumbent. Leaves with 7 to 10 pairs of ovate-elliptical

leaflets, which are sub-glabrous on the upper surface. Stipules sheathing. Peduncles shorter than or equal to the leaves when in flower. Flowers in a lax depressed-globular head, spreading when expanded. Bracts about as long as the pedicels. Calyx-tube campanulate, thickly clothed with black adpressed hairs; teeth triangular, more than half the length of the tube. Corolla three times as long as the calyx. Pods reflexed, stipitate on a carpophore about as long as the calyx-tube, fusiform-ovoid, attenuated at each end, deeply channelled on the lower suture which is inflexed and projects inwards in the form of an imperfect partition, clothed with short black bristly hairs.

On a grassy knoll at Little Cragindal, near the Castleton of Braemar, Aberdeenshire; and at the head of Glen Dole, Clova, Forfarshire.

Scotland. Perennial. Summer.

Rootstock very slender, much branched; branches terminating in short leafy stems. Leaves 2 to 5 inches long; leaflets $\frac{1}{2}$ to $\frac{1}{2}$ inch long, entire or slightly notched at the apex, with short white adpressed hairs on the underside and margins. Stipules rhomboid-ovate, apiculate, united at the base so as to form a kind of sheath. Peduncles axillary. Flowers $\frac{4}{5}$ inch long, in a very short capitate raceme, whitish tinged with lilac at the apex; the keel purple at the point. Pedicels shorter than the calyx-tube. Bracts membranous, scarcely exceeding the pedicels. Calyx-tube with the mouth oblique, the lower portion projecting beyond the upper, not ruptured by the fruit. Keel much curved upwards. Pods pendulous, straight, $\frac{1}{2}$ to $\frac{5}{8}$ inch long, inflated, olive, thickly clothed with short black bristly hairs, on a stalk as long as the calyx-tube, and with a slender beak at the apex about as long as the stalk. Seeds reniform, brown. Plant pale pea-green, slightly glaucous, rather sparingly clothed with white adpressed hairs except on the upper portion of the peduncles, calyces, and pods, where they are black.

Alpine Milk-Vetch.

SPECIES II.—**ASTRAGALUS HYPOGLOTTIS.** *Linn.*

PLATE CCCLXXVI.

Rootstock slender, creeping, much branched. Stems short, slender, decumbent. Leaves with 7 to 15 pair of elliptical leaflets, which are hairy on the upper surface. Stipules sheathing. Peduncles longer than the leaves. Flowers in dense ovoid-globular heads, erect when expanded. Bracts longer than the pedicels.

Calyx-tube cylindrical-oblong, thickly clothed with black hairs; teeth linear-lanceolate, one-third the length of the tube. Corolla scarcely twice as long as the calyx. Pods erect, stipitate on a carpophore much shorter than the calyx-tube, broadly oval-ovoid, abrupt or subcordate at the base, apiculate, faintly channelled at the lower suture, which is inflexed and projects inwards in the form of an imperfect partition, clothed with white woolly hairs.

On dry gravelly and chalky pastures. Not very common. Principally found in the eastern counties, from Essex and Herts to Aberdeen, Moray, and Ross.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock extensively creeping, very slender, much branched. Stems 2 to 8 inches long. Leaves 1 to 3 inches long; leaflets $\frac{1}{8}$ to $\frac{3}{8}$ inch long, rounded or notched at the apex, with scattered hairs even on the upper surface. Stipules lanceolate, united half-way up opposite the leaf so as to form a sheath. Flowers 6 to 20, $\frac{3}{4}$ inch long, bluish-purple, nearly sessile, in a dense racemose head not elongating in fruit; the bracts half as long as the calyx-tube. Pod $\frac{1}{4}$ to $\frac{3}{8}$ inch long, rupturing the calyx-tube. Seeds roundish-reniform, brownish-black. Plant greyish-green, sparingly clothed with white adpressed hairs, the upper part of the peduncles and calyces with black ones.

Purple Milk-Vetch, Tongue-under-Tongue.

French, *Astragale Hypoglotte*. German, *Wiesen Bärenschote*.

SPECIES III. — **ASTRAGALUS GLYCYPHYLLUS.** Linn.

PLATE CCCLXXVII.

Rootstock thick, woody, slightly branched. Stems elongated, stout, ascending or decumbent. Leaves with 4 to 7 pairs of oval leaflets, which are glabrous on the upper surface. Stipules not sheathing. Peduncles shorter than the leaves. Flowers in short compact ovoid racemes or elongated heads, spreading when expanded. Bracts rather longer than the pedicels. Calyx-tube bell-shaped, glabrous except at the mouth; teeth triangular-subulate, half the length of the tube. Corolla more than twice the length of the calyx. Pods erect, stipitate on a carpophore as long as the calyx-tube, cylindrical, tapering, curved upwards, gradually acuminate into a slender beak, deeply channelled at the lower suture, which is inflexed and projects inwards in the form of an imperfect partition, appearing glabrous to the naked eye.

In bushy places, woods, thickets, on the borders of fields, and

by roadsides. Not very common, and principally confined to the South and East of the island; extending from Cornwall and Devon along the South coast to Kent, and thence northward to Aberdeen, Moray, and Ross. On the West coast it occurs wild in North Wales, the basin of the Mersey, and Kirkeudbrightshire.

England, Scotland. Perennial. Summer and Autumn.

Stems few, nearly simple, flexuous, 1 to 3 feet long, generally trailing. Leaves 4 to 8 inches long; leaflets $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, obtuse or slightly acute at the apex, glabrous above, apparently so beneath, but when examined under a lens they will be found to be clothed with distant extremely short white hairs. Lower stipules ovate, auriculate; upper ones lanceolate, not united to each other. Flowers very numerous, $\frac{1}{2}$ inch long, cream-coloured. Pods 1 to $1\frac{1}{2}$ inch long, crescent-shaped, pale-olive when ripe, with the surface finely reticulated and clothed with short distant hairs invisible to the naked eye. Plant pea-green. Leaflets very thin and glaucous beneath; the leaves, as remarked by Dr. Bromfield, resembling those of *Robinia Pseud-acacia*, the tree commonly cultivated in gardens under the name of *Acacia* or *Locust-tree*.

Sweet Milk-Vetch, Liquorice Vetch.

French, *Astragale Régliste*. German, *Sussholzblättrige Bärenschote*.

This plant is sometimes called *Ladies'-fingers* or *Crow-toes*, from its fancied resemblance to the fingers of an open hand. The English name of *Milk-Vetch* is derived from its supposed quality of increasing the quantity of milk in cows fed on it. We find Gerarde, after enumerating the virtues of the plant in healing diseases, says: "It likewise procureth great store of milke in cattell that do eat thereof, whence it took his name." He adds: "It stoppeth bleeding, but is with much ado beaten, by reason of his hardnesse."

It grows on the poorest soils, even on obdurate clays, where scarcely any other plant will vegetate. It will grow as tall as clover, and makes very good hay, though scarcely attaining perfection for the first few years. When fully established, it produces a large supply of fodder, and is very desirable for poor lands; but after being once cut advances very slowly; hence its inferiority to clover as a fodder-plant.

TRIBE II.—HEDYSARÆÆ.

Stamens diadelphous, the uppermost free from the other 9. Pod divided by transverse partitions into 1-seeded portions, which most frequently separate from each other; more rarely reduced to one of these portions. Cotyledons changing into green leaves during germination. Stem not climbing or twining. Leaves pinnate or pinnately-trifoliate, with a terminal leaflet. Leaflets sometimes with stipels.

SUB-TRIBE I.—CORONILLEÆ.

Pod cylindrical or slightly compressed, not much constricted between the joints, which are numerous, rugose with elevated lines, but not spiny, and very seldom muricate. Flowers in umbellate heads. Leaves pinnate, with an odd terminal leaflet: rarely simple.

GENUS XIII.—ORNITHOPUS. *Linn.*

Calyx cylindrical-bellshaped, with 5 nearly equal teeth, of which the 2 upper ones are united at the base. Standard oval, slightly spreading, longer than the wings; keel very small, obtuse and not beaked at the apex. Stamens diadelphous, the alternate filaments dilated at the apex. Pod slender, cylindrical or slightly compressed laterally, more or less curved upwards, articulated, breaking into numerous 1-seeded indehiscient joints; joints not notched on the upper side, reticulated with elevated lines on the sides.

Small annuals, with leaves having numerous pairs of pinnæ, and very small stipules adnate to the petiole or cohering at the base by the margins farthest from it. Flowers in axillary umbellate few-flowered heads, yellow, white, or rose-colour.

The name of this genus is derived from the two Greek words *ορνις*, *ορνιθος* (*ornis*, *ornithos*), a bird, and *πους* (*pous*), a foot, the legumes exactly resembling a bird's foot.

SUB-GENUS I.—EU-ORNITHOPUS.

Pod compressed, constricted between the joints, which are widest in the middle and taper gradually to each end.

SPECIES I.—ORNITHOPUS PERPUSILLUS. *Linn.*

PLATE CCCLXXVIII.

Lower leaves stalked, upper ones sessile; leaflets 7 to 12 pairs, hairy. Flower-heads 3- to 7-flowered, with a leaflike pinnate bract at the base. Calyx-tube hairy, nearly three times as long as the teeth. Pod hairy or sub-glabrous, compressed, constricted between the joints, abruptly acuminate into a conical-subulate seedless beak nearly as long as the last joint, reticulated with prominent longitudinal anastomosing veins.

On dry commons, by roadsides, and in waste places. Not uncommon in England; rare in Scotland, where it extends northward to the counties of Moray and Dumbarton.

England, Scotland, Ireland. Annual. Spring and Summer.

Root producing from its crown numerous stems, which are decumbent or procumbent, very slender, nearly simple. Leaves 1 to 2 inches long, only the lower ones stalked; leaflets elliptical or oval, $\frac{1}{8}$ to $\frac{1}{4}$ inch long; those of the lower leaves sometimes obtuse or emarginate, those of the upper acute. Stipules very small, triangular. Peduncles filiform, about as long as the leaves. Flowers $\frac{1}{6}$ inch long. Calyx-tube cylindrical-funnel-shaped; teeth short, triangular. Standard and wings white with red lines; keel orange. Pods not diverging, $\frac{1}{2}$ to $\frac{3}{4}$ inch long, curved upwards into a bow, breaking into 5 to 9 indehiscent 1-seeded oval joints. Plant greyish-green, with the upper part of the stem, leaves, calyces, and pods clothed with short hairs.

Least Bird's-Foot.

French, *Ornithope Délicat.* German, *Kleine Klauenschote.*

SUB-GENUS II.—ARTHROLOBIUM. *Desv.*

Pod scarcely compressed, very slightly constricted between the joints, which are sub-cylindrical.

SPECIES II.—ORNITHOPUS EBRACTEATUS. *Brotero.*

PLATE CCCLXXIX.

Gr. & Godr. Fl. de Fr. Vol. I. p. 498.

Arthrolobium ebracteatum. *D.C.* *Bab.* Man. Brit. Bot. ed. v. p. 87. *Benth.* Handbook Brit. Fl. p. 174. *Hook. & Arn.* Brit. Fl. ed. viii. p. 110.

Leaves almost all stalked; leaflets 3 to 8 pairs, sub-glabrous. Flower-heads 2- to 5-flowered, without a bract at the base. Calyx-tube glabrous, five or six times as long as the teeth. Pod glabrous, cylindrical, not constricted between the joints, gradually attenuated into a subulate seminiferous beak longer than the last joint, without a raised line or prominent veins, rough with minute tubercles.

In sandy places. Very rare, and only known to occur in the Scilly Islands. It is also found in Alderney and Guernsey.

England. Annual. Spring to Autumn.

Root producing from its crown numerous slender ascending or decumbent nearly simple stems, 4 to 20 inches long. Leaves 1 to

2 inches long; leaflets oval or elliptical, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, rather distant. Stipules extremely small, deltoid, often scarcely discernible in the lower leaves. Peduncles filiform, about as long as the leaves. Flowers $\frac{1}{2}$ inch long, bright-yellow with red streaks. Calyx very long and slender, cylindrical-funnel-shaped. Pods not diverging, $\frac{3}{4}$ to 1 inch long, curved upwards into a bow, breaking into 10 or 14 indehiscient 1-seeded joints, the last one attenuated into a beak, but generally bearing a seed at the base. Plant dull glaucous-green, sub-glabrous, with a few adpressed hairs on the leaves (especially on their midribs) and the upper part of the stem.

Sand Bird's-Foot.

French, *Ornithope sans Bractées.*

GENUS XIV.—HIPPOCREPIS. Linn.

Calyx campanulate, with 5 teeth; teeth sub-equal, with the 2 upper ones united to their middle. Standard with the lamina spreading, orbicular, attenuated into a slender claw distant from those of the other petals; keel large, terminating in an acuminate beak directed towards the standard. Stamens diadelphous, with the alternate filaments dilated towards the apex. Pod much compressed, straight or curved, articulated, breaking into numerous indehiscient 1-seeded joints, which are more or less deeply notched on the upper side, with a raised band surrounding the notch in the form of a horse-shoe, smooth except on the raised portion, which is often clothed with minute raised points.

Herbs or undershrubs. Leaves with numerous pairs of pinnæ, and stipules slightly adnate to the petioles. Flowers yellow, generally in umbellate stalked axillary heads, more rarely solitary or in pairs.

The derivation of the name of this genus is from *ἵππος* (*hippos*), a horse, and *κρηπίς* (*krepis*), a shoe, in reference to the shape of the recesses of the pods, which are curved in such a manner as to resemble a chain of horse-shoes.

SPECIES I.—HIPPOCREPIS COMOSA. Linn.

PLATE CCCLXXX.

Rootstock much branched. Stems very numerous, decumbent, much branched, and somewhat woody at the base. Peduncles longer than the leaves. Pod curved downwards, undulated on the lower margin, deeply notched on the upper opposite each seed, and having on the sides over each seed a crescent-shaped raised protuberance covered with minute rough points.

In pastures, banks, borders of fields, and on rocky slopes; most partial to chalky soils. Rather common in the South of England, but becoming rare towards the North, and doubtfully native in Scotland, from which country it has only been reported from Ayrshire and Kincardineshire.

England, Scotland? Perennial. Summer.

Stems very numerous, much branched, decumbent, 6 to 18 inches long. Leaves 1 to 3 inches long, with 4 to 7 pairs of elliptical sub-glabrous leaflets, often truncate at the apex. Peduncles axillary, usually about twice as long as the leaves. Flower-heads depressed-globular, 5- to 12-flowered, with an extremely short involucre of scarious bracts. Flowers $\frac{3}{8}$ to $\frac{1}{2}$ inch long, pale-yellow, spreading when expanded at length reflexed. Pedicels shorter than the calyx-tube. Calyx very short, bell-shaped, with deltoid triangular teeth, the 2 upper ones united for the greater portion of their length and separate from the 3 lower. Petals more than three times as long as the calyx, contracted into slender claws as long as the laminae, that of the standard remote from the others so as to leave a space between them. Pod 1 to 1 $\frac{1}{2}$ inch long, generally curved downwards into a semicircle or a ring, with a series of almost continuous crescent- or kidney-shaped excrescences over the seeds, occupying its entire breadth over the middle of each and narrowing off towards each end, where they curve towards the superior margin. Seeds 2 to 6, brown, similar in shape to the excrescences which are over them. Plant pale-green, slightly glaucous, glabrous except occasionally a few hairs on the midribs of the leaves, peduncles, pedicels, and upper part of the stem.

Horse-shoe Vetch.

French, *Hippocrévide en Ombelle*. German, *Schopfförmiger Hufeisenklee*.

SUB-TRIBE II.—EU-HEDYSAREÆ.

Pod much compressed, and generally much constricted between the joints, which are few (occasionally reduced to 1), often rugose, muricated or spiny. Flowers in terminal racemes. Leaves pinnate, with an odd terminal leaflet, or pinnately-trifoliate, rarely unifoliate.

GENUS XV.—ONOBRYCHIS. Tournef.

Calyx bell-shaped, with 5 long subulate nearly equal teeth. Standard oval or obovate, spreading; wings shorter than the keel; keel obliquely truncate at the apex, somewhat beaked. Stamens

diadelphous, the filaments not dilated. Style geniculate at the middle, with a capitate stigma. Pod sub-sessile, roundish or ovoid, much compressed laterally, reticulated, often muricated or spiny, 1-seeded, indehiscent.

Herbs or undershrubs. Leaves with numerous pairs of pinnæ. Stipules cohering at the base by the sides furthest from the petiole. Flowers red or white, axillary or terminal, in long stalked spike-like racemes.

The generic name comes from *ovoc* (*onos*), an ass, and *βρυχω* (*brucho*), I gnaw, the plants being a favourite food of asses.

SPECIES I.—*ONOBRYCHIS SATIVA*. Lam.

PLATE CCCLXXXI.

Hedysarum Onobrychis, Linn. Sm. Eng. Bot. No. 96.

Rootstock somewhat woody. Calyx-tube campanulate, very short; teeth subulate, about twice as long as the tube, the lowest one a little shorter than the others. Wings little more than one-third the length of the standard and keel. Pods reticulated on the sides, with very prominent raised nerves, the lower margin with acute tubercles or short spines towards the apex.

On chalky banks, cliffs, and borders of fields. Not uncommon in the South-east of England; but it is impossible to say in what stations it is native, and in what it is the remains of Saintfoin cultivation.

England. Perennial. Summer and Autumn.

Rootstock dividing at the apex into numerous branches, and terminating in stout tough stems, which are curved at the base, then erect, somewhat flexuous, 1 to 2 feet high. Leaves 3 to 7 inches long; leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, varying from oval to strap-shaped, generally truncate and apiculate at the apex, and slightly narrowed towards the base. Stipules broadly lanceolate-acuminate, scarious, especially at the margins. Peduncles terminal, longer than the leaves, terminating in compact spikelike racemes, 2 to 4 inches long. Pedicels scarcely so long as the calyx-tube, in the axils of scarious lanceolate bracts, which exceed them in length. Calyx more or less thickly clothed with woolly hairs. Flowers $\frac{1}{2}$ inch long, rose-colour streaked with crimson, and suffused with that colour at the apex of the keel; wings so short that on a cursory examination the flower might seem to consist only of the standard and keel. Pods pubescent, $\frac{1}{4}$ to $\frac{3}{8}$ inch long, olive-colour, much compressed, the upper margin nearly straight, the lower one curved into more than a semicircle, somewhat truncate at the apex,

marked on the sides with a few meshes formed by very thick anastomosing veins, the lower margin more or less tubercular-spinous, and frequently there are smaller tubercles of the same kind upon the exterior anastomosing veins which run parallel with it. Seed solitary, kidney-shaped, compressed, dark reddish-brown, dim. Plant greyish-green, more or less pubescent. Leaflets glabrous on the upper surface.

Sainfoin.

French, *Sainfoin l'Esparcet*. German, *Gebaute Esparsetta*.

Besides the names already given, this plant is commonly known as Cock's-head, Medick Vetchling, &c. The etymology of the name Sainfoin, sometimes spelt Saintfoin, is carefully given by Dr. Prior in his "Popular Names of British Plants." He says the word appears to be formed from the French *sain*, wholesome, and *foin*, hay, in Latin *sanum fenum*, representing its older name *Medica*, which properly meant "of Media," but was mistaken as meaning *curative*. According to Plukenet and Hill, the name Saintfoin was first given to the lucerne (*Medicago sativa*), and that of lucerne to an *Onobrychis*, our present Saintfoin. There does not appear to be any saint named Foin, nor any reason for ascribing divine properties to this plant. According to Bornare, quoted by Duchesne, "Le Sainfoin, ainsi appelé parce que c'est le fourrage le plus appétissant, le plus nourrissant, et le plus *sain* qu'on puisse donner aux chevaux et aux bestiaux." This plant, though a native of England, is never found in its wild state but on dry, warm, chalky soils, where it is of great duration. It has long been cultivated in France and other parts of the Continent, and as an agricultural plant was introduced from France into England about the middle of the seventeenth century. It has since been a good deal cultivated in chalky districts, and its peculiar value is that it may be grown on soils unfit for being constantly under tillage, and which would yield little under grass. This is owing to the long and descending roots of the Saintfoin, which will penetrate and thrive in fissures of rocky and chalky substrata. Arthur Young particularly advocated its use, saying that upon land fitted for its growth no farmer could sow too much, and in the Code of Agriculture it is said to be "one of the most valuable herbage plants we owe to the bounty of Providence." The strong advocacy of Arthur Young and other writers of the same period caused its culture on many soils where it is now almost entirely given up. On chalky lands, and particularly on the hard chalk of the Surrey and Sussex downs, no fodder-plant yields so abundant a return. On gravel it often succeeds well, but on rich alluvial soil lucerne is far more productive, while on wet land Saintfoin will not grow. The most economical method of using this plant is by cutting it off for green food, or making it into hay; as the root rises a little above the surface of the ground, it is apt to be injured if mown too closely, or if fed off by sheep. If cut before it comes into flower, two good crops may be often obtained during each season. On some of the light poor lands of Norfolk it has been grown with great advantage, for the long roots and fibres bind the particles of soil, and at the same time manure it by their gradual decay: many tracts of land have been rendered fertile by the judicious use of Saintfoin. The usual duration of Saintfoin in a profitable state is from eight to ten years. It usually attains its perfect growth in about three years, and begins to decline about the eighth or tenth year on calcareous soils, and about the seventh or eighth on gravels. There are instances, however, of fields of Saintfoin which have been neglected and left to run into pasture, in which plants have been found

upwards of fifty years from the time of sowing. In general, the great enemy to the endurance of Saintfoin is the grass, which accumulates and forms a close tuft on the surface, and thus chokes up the plant. The Saintfoin seems to have been known to the Romans. Pliny recommends the root of a plant supposed to be identical with it as an astringent medicine, and Gerarde quotes Dioscorides as an authority for the virtues of the *Onobrychis*.

TRIBE III.—VICIÆ.

Stamens diadelphous or sub-monadelphous, the uppermost one free from the other 9. Pod continuous (not articulated), 1-celled, dehiscent. Cotyledons remaining enclosed in the seed-coat during germination. Stem herbaceous, generally climbing by means of tendrils. Leaves pinnate, almost always without an odd terminal leaflet; the apex of the common petiole and a few of the apical lateral pinnæ often converted into tendrils, more rarely all reduced to tendrils, or the leaf represented only by a foliaceous petiole; leaflets entire, without stipels. Flowers axillary, in racemes or sub-solitary, wings and keel usually united by the auricles at the base of their laminæ.

GENUS XVI.—VICIA. *Linn.*

Calyx tubular-bellshaped, with 5 teeth, which are nearly equal, or the 2 upper ones shorter. Standard oval or obovate, spreading. Stamens diadelphous, with the tube obliquely truncate. Style filiform, ascending, without a conspicuous dilatation towards the apex, near which it is hairy all round or on the outer side. Pod stalked or sessile, exserted, elongated and many-seeded, or short and few-seeded, dehiscent.

Herbs, generally climbing. Leaves mostly with numerous pairs of rather small pinnæ and terminating in a tendril. Stipules generally half-arrowshaped. Flowers of various colours, on axillary peduncles, which are 1-, 2-, or racemosely many-flowered.

The name is said to come from *vincio*, I bind together, because the species have tendrils by which they bind other plants.

SECTION I.—ERVUM. *Tournef.*

Leaves with 3 or many pairs of leaflets. Peduncles elongated, 1- to 8-flowered. Flowers racemose, small. Style pubescent all round towards the apex, or nearly glabrous. Pods stipitate or subsessile, short, 2- to 8-seeded.

SPECIES I.—*VICIA HIRSUTA*. Koch.

PLATE CCCLXXXII.

Bab. Man. Brit. Bot. ed. v. p. 82. Hook. & Arn. Brit. Fl. ed. viii. p. 114. Benth. Handbook Brit. Fl. p. 177. Fries, Sum. Veg. Scand. p. 46.

Ervum hirsutum, Linn. Sm. Eng. Bot. No. 970. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 218.

Cracca minor, "Riv." Gr. & Godr. Fl. de Fr. Vol. I. p. 475.

Annual. Leaves with 6 to 10 pairs of strap-shaped or oblong-linear leaflets, truncate-emarginate, and apiculate at the apex; common petiole terminating in a branched tendril. Lower stipules laciniate, the upper ones simple. Peduncles equal to or shorter than the leaves, 2- to 6-flowered. Calyx-tube not gibbous on the upper side; teeth nearly equal, subulate, a little longer than the tube. Corolla not twice as long as the calyx. Pods reflexed, sessile within the calyx, oblong, compressed, obliquely truncate at the apex, abruptly acuminate into a short beak terminating the upper suture, generally hairy. Seeds 2, compressed, globular, with the hilum linear, one-third the circumference of the seed.

A weed in cultivated ground, and in hedges and waste places. Very common and generally distributed.

England, Scotland, Ireland. Annual. Spring to Autumn.

Stem weak, branched or simple, climbing, 1 to 2 feet long or more. Leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, narrowly-oblong or strap-shaped, a little narrowed towards the base. Stipules slender, cut into 2 to 4 long subulate segments, the innermost segment broader than the others, those of the upper leaves usually entire. Peduncles axillary, $\frac{3}{4}$ to 2 inches long, shortly awned at the apex. Pedicels scarcely as long as the calyx, ascending, forming an angle with the spreading flowers. Flowers $\frac{1}{2}$ inch long, whitish tinged with pale blue, in a lax raceme at the upper part of the peduncle; standard scarcely spreading, a little longer than the other petals. Style glabrous. Pod $\frac{1}{2}$ to $\frac{4}{5}$ inch long, black or dark brown when ripe, convex on the margin at the base above, then straight to the apex; nearly straight below to near the apex, where the margin becomes convex, not much more than twice as long as deep, bossulated by the seeds, with short white woolly hairs in all the British specimens I have seen. Seeds about the size of a rape-seed, smooth, black, or pale olive-yellow marbled with blackish-purple. Plant greyish-green, more or less thickly clothed with distant short hairs.

Hairy Tare.

French, *Ers Hérisée*. German, *Zitterlinse*.

SPECIES II.—**VICIA TETRASPERMA.** *Mönch.*

PLATE CCCLXXXIII.

*Bab. Man. Brit. Bot. ed. v. p. 83. .**V. tetrasperma*, var. *a*, *Hook. & Arn. Brit. Fl. ed. viii. p. 113. Benth. Handbook Brit. Fl. p. 177.**Ervum tetraspermum*, *Linn. Sm. Eng. Bot. No. 1223. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 218. Gr. & Godr. Fl. de Fr. Vol. I. p. 474. Lowe, Man. Fl. Mad. p. 198.*

Annual. Leaves with 3 to 5 pairs of elliptical-strapshaped or linear leaflets, rounded or rounded-truncate and apiculate at the apex; common petiole terminating in a simple or once- or twice-forked tendril. Lower stipules cleft into 2 lanceolate-acute lobes, those of the upper leaves generally entire. Peduncles equal to or shorter than the leaves, 1- to 2- or rarely 3-flowered. Calyx-tube not gibbous on the upper side; teeth unequal, triangular, rather shorter than the tube. Flowers more than twice as long as the calyx. Pods spreading, stipitate, cylindrical, very slightly compressed, rounded at the apex where they are apiculate but not acuminate, usually glabrous. Seeds generally 4, but from 3 to 5, globular, with the hilum linear-oblong, between one-fourth and one-fifth the circumference of the seed.

In cornfields, waste places, hedges, and thickets. Not uncommon in England, but rare in Scotland, where it has occurred in the counties of Kirkeudbright, Lanark, Fife, and Forfar, though probably introduced at least in the two latter.

England, Scotland, Ireland. Annual. Spring to Autumn.

Stems weak, branched or simple, climbing, 1 to 3 feet high. Leaflets $\frac{1}{4}$ to $1\frac{1}{4}$ inch long, narrower in proportion than those of *V. hirsuta*, and tapering more towards the apex, which is rounded. Stipules with a single large subulate tooth, projecting on the inner side, so that the form is half-hastate. Peduncles axillary, $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, usually shortly awned at the apex. Pedicels rather longer than the calyx, curved-spreading, not forming an angle with the flowers. Flowers $\frac{1}{4}$ inch long, whitish tinged with pale-blue, in a raceme with usually 2 and often only 1 flower at the apex of the peduncle. Calyx with the upper teeth shorter and broader than the others. Standard scarcely spreading, not longer than the wings, streaked with blue; keel tipped with blue. Style hairy all round at the apex. Pod $\frac{1}{2}$ to $\frac{5}{8}$ inch long, the depth about one-fourth of the length, olive or olive-brown when ripe, slightly bossulated by the seeds, on a gynophore about as long as the calyx,

which is in a continuous line with the pedicel and forms an obtuse angle upwards with that of the pod; upper and lower margins of the pod nearly parallel, rounded both at the base and the apex, the latter mucronate from the remains of the style: but this mucro is in the middle—not at the apex of the upper suture as in the last species, the surface glabrous in British specimens. Seeds dull-brown, or yellowish-olive marbled with black, the hilum about three times as long as broad. Plant pale greyish-green, sub-glabrous.

Four-seeded Slender Tare.

French, *Vesce à quatre Graines.* German, *Viersamige Erve.*

SPECIES III.—**VICIA GRACILIS.** *Lois.*

PLATE CCCLXXXIV.

Bromfield, in Eng. Bot. Sup. No. 2904. *Bab. Man. Brit. Bot. ed. v. p. 83.*

Vicia tetrasperma, var. β *gracilis*, *Hook. & Arn. Brit. Fl. ed. viii. p. 114. Benth. Handbook Brit. Fl. p. 177.*

Ervum gracile, *D. C. Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 219. *Gr. & Godr. Fl. de Fr. Vol. I. p. 475. Lowe*, Man. Fl. Mad. p. 195.

Annual. Leaves with 2 to 4 pairs of linear-strapshaped leaflets, abruptly acuminate and mucronate at the apex; common petiole terminating in a simple or once-forked tendril. Lower stipules cleft into 2 lanceolate acute lobes, those of the upper leaves usually similar, more rarely entire. Peduncles longer than the leaves, 1- to 7-flowered. Calyx-tube not gibbous on the upper side; teeth unequal, triangular, shorter than the calyx-tube. Flowers three times as long as the calyx. Pods spreading-reflexed, stipitate, cylindrical, scarcely compressed, rounded at the apex, where they are apiculate but not acuminate, usually glabrous. Seeds generally 6, but varying from 4 to 7, globular, with the hilum roundish-oval, about one-twelfth the circumference of the seed.

In cornfields and waste places. Rather rare, and apparently confined to the South of England. I have gathered it only in Essex, but specimens have been sent me from the counties of Dorset, Hants, and Cambridge, and it is reported on good authority from Kent, the neighbourhood of Bath, and county Kerry.

England, Ireland. Annual. Spring to Autumn.

Extremely like *V. tetrasperma*, on which account, no doubt, it is frequently overlooked, so that it appears to be scarcer than it really is. It is, however, a stouter plant, with fewer pairs of leaflets; the leaflets longer, narrower, and decidedly acute; the peduncles much longer, the upper ones much exceeding the leaves from which

they spring, frequently 3 or 4 inches long. The flowers are more numerous, larger, $\frac{3}{8}$ inch long, more deeply tinged with lilac-blue at the apex. The pods more shortly stipitate, longer, $\frac{1}{2}$ to $\frac{3}{4}$ inch long. The seeds dark brown or very dark olive mottled with black, with the hilum very minute, about once and a half as long as broad. The foliage of this species is also rather more glaucous than that of the last.

The differently shaped hilum of the seeds is an important character which invariably accompanies the longer peduncles and pods with more numerous seeds. The length of the hilum appears a constant character in all the Vetches.

Many-seeded Slender Tare.

French, *Vesce Grêle.* German, *Schlanke Erve.*

SECTION II.—CRACCA. *Riv.*

Leaves with many pairs of leaflets. Peduncles elongated, many-flowered. Flowers racemose, rather large. Style pubescent all round towards the apex. Pods stipitate, rather short, many-seeded.

SPECIES IV.—**VICIA CRACCA.** *Linn.*

PLATE CCCLXXXV.

Cracca major, "*Franken.*" *Gr. & Godr. Fl. de Fr. Vol. I. p. 468.*

Rootstock creeping. Stem climbing or trailing. Leaves with 8 to 12 pairs of oblong-elliptical or oblong-linear leaflets, rounded or abruptly acuminate and mucronate at the apex; common petiole terminating in a branched tendril. Stipules half-hastate. Peduncles equalling or exceeding the leaves, with 10 to 30 flowers in a compact unilateral raceme. Pedicels shorter than the calyx-tube. Calyx slightly pubescent, the tube more convex on the upper than on the lower side; teeth very unequal, the lowest subulate and as long as the tube, the 2 upper ones broader than long; standard three times as long as the calyx, contracted above the middle. Pods spreading, stipitate on a gynophore shorter than the calyx-tube, oblong, slightly compressed, acuminate at the apex into a short blunt beak, smooth. Seeds globular, with the hilum linear, one-third the circumference of the seed.

In hedges, thickets, borders of fields, and waste places. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Rootstock creeping. Stem weak, simple or branched, with prominent ridges, climbing or trailing, 18 inches to 6 feet long.

Leaflets $\frac{1}{4}$ to 1 inch long, varying in breadth. Stipules narrowly lanceolate, usually with a single long triangular tooth at the base on the side next the stalk. Peduncles $1\frac{1}{2}$ to 6 inches long, naked at the base, terminating in a dense raceme of unilateral spreading-reflexed flowers. Calyx-tube scarcely longer than broad, very convex on the upper side; upper teeth scarcely one-sixth the length of the tube and very broad, the lateral ones triangular, about two-thirds the length of the tube, the lowest of all subulate and equal to the tube. Flowers $\frac{1}{2}$ inch long, bright-blue; standard dilated above the base on each side below the middle, and again contracted at rather more than one-third from the apex, where it is emarginate; wings nearly as long as the standard; keel shorter. Style with rather long woolly hairs just below the apex. Pods $\frac{3}{4}$ to 1 inch long, fawn-coloured when ripe, faintly reticulated, forming an obtuse angle upwards with its gynophore, the upper and lower margins nearly parallel, obliquely truncate in an ogee curve at the apex, where the upper suture is a little deflexed, so that the beak is slightly bent down; beak tipped by the style, which is sharply bent upwards. Seeds globular, $\frac{1}{8}$ inch in diameter, dim, black, or olive marbled with black. Plant greyish-green, slightly pubescent, the leaves sometimes with silky hairs, especially on the under side, most apparent when young.

Tufted Vetch.

French, *Vesce Cracca*. German, *Gemeine Vogelwicke*.

This beautiful plant grows several feet high, often covering the hedges with its slender stems and leaves and long dense clusters of purplish-blue flowers, forming one of the greatest ornaments of our country lanes in the middle and latter part of summer. Dr. Plot, in his "Natural History of Staffordshire," says that this and the Wood Vetch advance starved or weak cattle above any other provender. The Vetches yield abundance of food; but the great difficulty in the way of their cultivation as fodder is that, away from their native situations, where they hang and support themselves by their spiral tendrils on hedges or trees that may be near them, they would doubtless be very troublesome, and probably choke themselves for want of support.

SPECIES V.—**VICIA OROBUS.** *D. C.*

PLATE CCCLXXXVI.

Orobus sylvaticus, *Linn.* *Sm. Eng. Bot.* No. 518.

Vicia cassubica, var. *Orobus*, *Seringe*, in *D. C. Prod.* Vol. II. p. 356.

Rootstock short, not stoloniferous. Stem stout, erect not climbing. Leaves with 6 to 14 pairs of oval or oblong-elliptical leaflets, rounded or abruptly acuminate and mucronate at the apex; common petiole terminating in a short straight subulate point. Stipules half-sagittate or half-hastate-sagittate, frequently toothed on the outer margin. Peduncles equalling or exceeding the leaves, with

5 to 20 flowers in a short compact unilateral raceme. Pedicels nearly as long as the calyx-tube. Calyx slightly pubescent; the tube more convex on the upper than on the lower side; teeth unequal, triangular, the lowest one narrowest and longest, but shorter than the tube, the 2 upper ones nearly as long as broad. Standard three times as long as the calyx, not contracted above the middle. Pods spreading, stipitate on a gynophore longer than the calyx-tube, elliptical-oblong, compressed, acuminate at the apex into a sharp beak, smooth. Seeds "ovoid, compressed, hilum equalling half the circumference of the seed."—(Gr. & Godr.)

In rocky woods, thickets, and pastures in hilly districts. Rare. In Somerset, Shropshire, Wales, Durham, the Lake district, the South of Scotland, Lanarkshire, and the Western Islands. I have seen it growing only on Braid Hills, near Edinburgh.

England, Scotland, Ireland. Perennial. Summer.

Rootstock branched, many-headed, but without long creeping stolons as in the allied Continental species *Vicia cassubica*. Stem stout, curved near the base, then erect, 8 inches to 2 feet high, with the lowest leaves abortive, reduced to 2 or 3 acute leaflets, combined together with large somewhat scarious stipules. Leaves rather close together, with the leaflets $\frac{3}{8}$ to $1\frac{1}{4}$ inch long, variable in breadth, strongly veined beneath. Peduncles 2 to 4 inches long, bare of flowers for half to three-fourths of their length. Flowers much crowded, $\frac{5}{8}$ inch long, whitish tinged with bluish-purple at the tip. Calyx-tube much bulged on the upper side; the uppermost pair of teeth deltoid, one-third the length of the tube, the intermediate ones deltoid-triangular, about half the length of the tube, the lowest triangular and about two-thirds the length of the tube. Standard not excised beyond the middle, emarginate at the apex, where it is marked with purple veins, a little longer than the wings, which have remote purple veins, these again exceeding the keel, which is blotched with bluish-purple at the apex. Style with short hairs beneath the stigma all round. The ripe pods or seeds I have not seen; the immature pods are about 1 inch long, tapering slightly both towards the base and the apex, the latter terminates in a triangular acute beak, and is tipped by the remains of the style, which rises upwards at an obtuse angle. Plant pale bright-green, sparingly pubescent.

Wood Bitter Vetch.

French, *Vesce Orobe*. German, *Schlingenlose Erva*.

SPECIES VI.—*VICIA SYLVATICA*. *Linn.*

PLATE CCCLXXXVII.

Rootstock creeping. Stem weak, climbing or trailing. Leaves with 6 to 10 pairs of oval or broadly elliptical leaflets, rounded or truncate and mucronate at the apex; common petiole terminating in a simple or branched tendril. Stipules half-lunate, laciniate, the upper ones half-sagittate, toothed only at the base. Peduncles equalling or exceeding the leaves, with 5 to 18 flowers in a lax unilateral raceme. Pedicels as long as the calyx-tube. Calyx glabrous, the tube more convex on the upper than on the lower side; teeth slightly unequal, triangular-subulate, the lowest one longest but shorter than the tube, the 2 upper ones similar to the others but a little shorter. Standard three times as long as the calyx, not contracted above the middle. Pods reflexed, stipitate on a gynophore longer than the calyx-tube, narrowly oblong or elliptical-oblong, compressed, acuminate at the apex into a rather long sharp beak, glabrous. Seeds globular, brownish, with the hilum linear, two-thirds the circumference of the seed.

In woods and thickets, and on rocky banks, particularly in hilly districts. Rather rare, but widely distributed, extending from Somerset and the Isle of Wight to Aberdeenshire and Argyleshire.

England, Scotland, Ireland. Perennial. Summer.

Stems 2 to 4 feet long, more often trailing than climbing. The leaves on the short lateral branches frequently have the tendrils reduced to subulate points not much longer than those of *V. Orobus*. Leaflets thin in texture, $\frac{1}{4}$ to $\frac{3}{4}$ inch long, broader than those of the preceding species. Stipules very broad, palmately laciniate or deeply toothed, spreading or reflexed, the principal segments frequently tipped with purple. Peduncles 2 to 7 inches long, bare of flowers for about half their length. Flowers $\frac{3}{4}$ inch long, white tinged with lilac. Standard gradually widened out towards the apex, which is veined with purple and scarcely notched; wings with a few purple veins; keel with a purplish blotch at the apex, the bend in the lower margin nearly a right angle, and the apex very broad, which makes the flowers considerably broader towards the apex than in the two preceding species, in which the angle is more obtuse. Style with short hairs all round underneath the stigma. Pods black or dark olive when ripe, 1 to $1\frac{1}{4}$ inch long, minutely shagreened all over, in a nearly continuous line with the gynophore, slightly curved upwards at the beak, which terminates

in the remains of the style bent upwards. Seeds $\frac{1}{10}$ inch across, dim, brownish-black. Plant bright pea-green, glabrous.

Wood Vetch.

French, *Vesce des Bois*. German, *Wald Erve*.

This beautiful plant is well known to all lovers of wild flowers as a favourite object. In foliage, flowers, and grace, it is not exceeded by any of our climbing plants. Scott, was alive to its charms when he wrote,—

“And where profuse the Wood Vetch clings
Round ash and elm in verdant rings;
Its pale and azure pencill'd flower
Should canopy Titania's bower.”

SECTION III.—EU-VICIA. *Coss.*

Leaves with many pairs of leaflets. Peduncles very short, scarcely exceeding the pedicels, axillary, 2- to 6-flowered or scarcely observable when the flowers are solitary or in pairs. Flowers racemose or sub-solitary. Style bearded with a tuft of long hairs below the stigma on the outer side. Pods stipitate and rather short, or sessile and elongated.

SPECIES VII.—VICIA SEPIUM. *Linn.*

PLATE CCCLXXXVIII.

Rootstock creeping, stoloniferous. Stem weak, climbing or trailing. Leaves with 5 to 8 pair of oval or ovate leaflets, truncate or sub-truncate and mucronate at the apex; common petiole terminating in a branched tendril. Stipules half-lunate, strongly toothed, the upper ones half-sagittate and nearly entire, the uppermost oblong-lanceolate, entire. Peduncles much shorter than the leaves, with 2 to 5 (usually 4) spreading-reflexed flowers in a very short compact unilateral raceme. Pedicels shorter than the calyx-tube. Calyx hairy, with the teeth unequal, shorter than the tube, which is more convex on the upper than lower side, the 3 lower ones deltoid, suddenly acuminate near the base into subulate, the 2 upper ones shorter, broader at the base, and curved upwards. Standard glabrous, twice as long as the calyx. Pods ascending or spreading, stipitate on a gynophore shorter than the calyx-tube, oblong, slightly compressed, acuminate at the apex into a rather long sharp beak slightly curved downwards, glabrous. Seeds sub-globular, with the hilum two-thirds the circumference of the seed.

In woods, thickets, hedges, and borders of fields. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stems $1\frac{1}{2}$ to 3 feet high. Leaflets of the barren shoots generally smaller and more roundish-ovate than those of the flowering stems, which have the basal leaflet of each leaf $1\frac{1}{2}$ to 1 inch long, becoming gradually smaller as they approach the apex of the common petiole; their shape is usually oval-ovate, but sometimes more nearly approaching lanceolate, and the degree of truncation at the apex is very variable, the narrower forms of leaflets being sometimes almost acute. Peduncles $\frac{1}{8}$ to $\frac{1}{2}$ inch long, the flowers commencing close to its base, and generally 4 in number, though frequently only 2. Flowers $\frac{1}{2}$ to $\frac{3}{4}$ inch long, pale livid-purple, with the wings more inclining to blue, and the keel whitish. Pods 1 to $1\frac{1}{4}$ inch long, black when ripe, with a very sharp somewhat falcate beak. Seeds $\frac{1}{8}$ inch across, smooth, dim, dull reddish-brown or olive marbled with black. Plant dull-green, with short scattered hairs; the edges of the leaves ciliated, and the pedicels and calyces with longer woolly hairs.

Bush Vetch.

French, *Vesce des Haies*. German, *Zaun Wicke*.

This species shoots earlier in the spring than any other plant eaten by cattle, vegetates late in the autumn, and continues green all the winter; but it is difficult to collect the seeds, as the pods burst and scatter them about; and, moreover, hardly a third part of them will vegetate, being made the nidus of an insect.

SPECIES VIII.—**VICIA LUTEA.** Linn.

PLATE CCCLXXXIX.

Rootstock none, or short and much branched. Stems weak, climbing or procumbent. Leaves with 5 to 7 pairs of elliptical or linear-elliptical leaflets, rounded or acute and mucronate at the apex; common petiole terminating in a simple or branched tendril or occasionally in a subulate point. Stipules half-hastate, small, the upper ones ovate-acuminate. Flowers axillary, solitary, rarely in pairs, erect or ascending. Pedicels shorter than the calyx-tube. Calyx membranous, glabrous; tube gibbous at the base on the upper side; teeth unequal, the upper ones deltoid, suddenly contracted to subulate, about half the length of the tube or little more, the lateral pair triangular-subulate, nearly equal to the tube, the lowest one similar but slightly exceeding the tube. Standard glabrous, three or four times as long as the calyx-tube, with an

oblong-oval lamina. Pods spreading or spreading-reflexed, stipitate on a gynophore shorter than the calyx-tube, oblong, scarcely compressed, acuminate at the apex into a rather long sharp beak, curved downwards, clothed with rather long hairs with papillæ or tubercles at their bases, rarely glabrous. Seeds globular-compressed, smooth with shallow distant punctures; hilum oblong, three times as long as broad and one-fifth of the circumference of the seed.

SUB-SPECIES I.—*Vicia eu-lutea*.

PLATE CCCLXXXIX.

V. lutea, *Sm. Eng. Bot. No. 481. Bab. Man. Brit. Bot. ed. v. p. 85. Benth. Handbook Brit. Fl. p. 179.*

Plant sparingly clothed with short hairs. Upper stipules usually blotched with purple. Calyx-teeth very unequal, the uppermost about half as long as the tube. Pod hairy, hairs with papillæ or tubercles at their bases.

On stony banks and shingly sea-beaches. Very local. I have only seen it from Shoreham, Sussex; Weymouth, Dorset; Dunure, Ayr; North Queensferry, Fife; and St. Cyrus, Kincardineshire; but it is reported also from Cornwall, Somerset, Devon, and Suffolk.

England, Scotland. Annual. Summer and Autumn.

Plant growing in tufts, with the stems 3 to 18 inches long, procumbent or prostrate, at least in the stations where I have seen it, though doubtless it would climb by its tendrils if there were support within reach, which is not the case on a pebbly sea-beach. Leaflets $\frac{1}{4}$ to $\frac{3}{4}$ inch long, those of the lowest leaves frequently oval, but the upper ones much narrower. Flowers very long and narrow, $\frac{3}{4}$ to 1 inch long, straw-coloured, often tinged with purplish lead-colour or entirely of the latter colour; standard scarcely spreading, longer than the wings and much longer than the keel. Pods 1 to $1\frac{1}{2}$ inch long, nearly black when ripe, with a falcate beak. Seeds $\frac{1}{8}$ to $\frac{1}{6}$ inch in diameter, globular, slightly compressed, rather dim, very finely punctured, blackish-brown or paler marbled with black. Plant greyish-green, with rather long distant hairs, especially on the petioles and margins of the leaves.

The Fifeshire and Ayrshire plants are smaller and more cæspitose, with the tendrils simple or even rudimentary, the flowers smaller, more inclining to lead-colour than straw-colour, the pods smaller, and the seeds shorter; while the specimens from St. Cyrus and Shoreham are larger and stouter, with the tendrils branched, the flowers longer, straw-colour with or without a lead-coloured tinge on the standard towards the base, and the pods and seeds

larger. The plant from Weymouth, in Smith's Herbarium, has the pods more nearly glabrous, and evidently approaches the next sub-species.

Rough-podded Yellow Vetch.

French, *Vesce Jaune.* German, *Gelbe Wicke.*

SUB-SPECIES? II.—*Vicia lævigata.* Sm.

PLATE CCCXC.

V. sativa, var. *Benth.* Handbook Brit. Bot. p. 179. *Hook. & Arn.* Brit. Fl. ed. viii. p. 111?

Plant entirely glabrous. Stipules all green. Calyx-teeth unequal, but rather less so than in the preceding sub-species. Pods without hairs, quite smooth or faintly papillose-tuberculated.

On the pebbly beach at Weymouth, Dorset, but now extinct.

[England.] "Perennial," (Sm.) Summer and Autumn.

Extremely like *V. eu-lutea* but smaller, and glabrous, with the stems less striated, the leaflets rather blunter at the apex, firmer in texture, and deeper green. Seeds larger and more mottled. "Flowers pale blue or whitish, seldom yellowish." (Smith.) This writer also says that the calyx-teeth are generally more equal in length; but on examining the specimens in his Herbarium I can see but little difference in this respect between the two plants.

I have seen no specimens besides those in the Smithian Herbarium, which contains both the wild plant from Weymouth and larger cultivated examples from Dr. Goodenough's garden. The Weymouth specimens of *V. lutea* in Smith's Herbarium approach *V. lævigata*, and it is very desirable that this resemblance should be further investigated by botanists in that neighbourhood.

Mr. Bentham places *V. lævigata* under *V. sativa*, to which it bears no resemblance, so that I conclude he has not examined Smith's specimens.

Smooth-podded Sea Vetch.

SPECIES IX.—*VICIA HYBRIDA.* Linn.

PLATE CCCXCI.

Rootstock none. Stems weak, climbing or trailing. Leaves with 5 to 7 pair of oblong-obovate or oblong-oblanccolate leaflets, more or less deeply notched at the apex, with a small point in the centre of the notch; common petiole terminating in a branched tendril. Stipules half-hastate. Flowers axillary, solitary, erect or ascending. Pedicels shorter than the calyx-tube. Calyx membranous, slightly hairy; tube gibbous at the base on the upper side; teeth unequal,

all subulate, the upper pair rather shorter than the calyx-tube, the 3 lower ones a little exceeding it. Standard hairy on the outside, three or four times as long as the calyx-tube, with an oblong-oval lamina. Pods spreading or spreading-reflexed, substipitate, on a gynophore much shorter than the calyx-tube, oblong, scarcely compressed, acuminate at the apex into a rather long sharp beak curved downwards, clothed with long hairs but without papillæ, at length glabrous. Seeds globular, smooth, with shallow punctures; hilum oval, twice as long as broad, one-sixth the circumference of the seed.

Formerly found at Glastonbury Tor Hill, Somerset, where it grew with *V. lutea*; but it appears to be now lost.

[England.] Annual. Summer and Autumn.

Resembles *V. lutea*, but is stouter, with the leaflets broader towards the apex, where they are retuse or notched. Calyx with the teeth more slender, longer, and less unequal. Flowers 1 inch long, yellow, frequently veined with purple; the standard always hairy. The seeds, for which I am indebted to Mr. H. C. Watson, are larger than those of the last species. I only possess cultivated specimens raised from seed sent by Mr. T. B. Flower, said to be derived from the descendants of the Glastonbury Tor plant.

Hairy Flowered Vetch.

SPECIES X.—*VICIA SATIVA*. *Linn.*

PLATES CCCXCII. CCCXCIII. CCCXCIV.

Rootstock none. Stems rather weak, climbing, trailing or ascending. Leaves with 4 to 7 pairs of obovate, elliptical, or linear leaflets, notched, truncate or abruptly acuminate and mucronate at the apex; common petiole terminating in a branched tendril. Stipules half-hastate or lanceolate, denticulated or entire. Flowers axillary, solitary or in pairs, ascending or spreading-ascending. Pedicels much shorter than the calyx-tube. Calyx herbaceous, slightly hairy; tube gibbous at the base on the upper side; teeth equal, subulate, about as long as the tube; standard glabrous, thrice as long as the calyx-tube, with the lamina roundish. Pods ascending or spreading, sessile, sub-cylindrical, compressed, acuminate at the apex into a rather long sharp beak, slightly curved downwards, clothed with very short hairs but without papillæ. Seeds sub-globular, compressed, smooth, dim; hilum linear, one-fifth the circumference of the seed.

SUB-SPECIES I.—*Vicia eu-sativa*.

PLATE CCCXCII.

V. sativa, *Fries*, *Sum. Veg. Scand.* p. 47. *Koch*, *Syn. Fl. Germ. et Helv. ed. ii.* p. 217
Gr. & Godr. Fl. de Fr. Vol. I. p. 458.

V. sativa, var. *a*, *Bab. Man. Brit. Bot. ed. v.* p. 85. *Benth. Handbook Brit. Fl.* p. 179.
Hook. & Arn. Brit. Fl. ed. viii. p. 111.

Stems stout. Leaflets of all the leaves obovate or oblong oblanceolate, notched at the apex. Stipules frequently with a purplish blotch. Flowers nearly 1 inch long, with the standard lilac and the wings deep purple. Pods 2 to 3 inches long, generally erect or ascending, pale reddish-brown when ripe, with imperfect fibrous cellular partitions between the seeds, which produce strongly - marked bosses on the exterior of the pod. Seeds nearly $\frac{1}{4}$ inch in diameter.

On the margins of fields and amongst corn; not unfrequent, but only in places where the vetch is cultivated, and having no claims to be considered indigenous.

[England, Scotland, Ireland.] Annual. Spring to Autumn.

Stem climbing or decumbent, 18 inches to 3 feet long, slightly branched towards the base. Leaflets $\frac{1}{2}$ to 1 inch long, variable in breadth. Standard with the lamina broader, more reflexed, and more suddenly contracted into the claw than in any of the preceding species, longer than the wings, and much longer than the keel. Keel with a purple blotch at the apex. Pod rupturing the calyx, sparingly clothed with short weak hairs, which remain even until maturity. Seeds brown, sometimes spotted with black, rarely white. Plant bright-green, slightly hairy.

Common Cultivated Vetch.

French, *Vesce Cultivée*. German, *Saat Wicke*.

From very ancient times the Vetch has been grown in Southern and Central Europe as a fodder-plant, and in England has been commonly cultivated certainly as far back as the time of Ray. Gerarde does not attribute any good qualities to it, but quotes Galen, who says: "I have known some who in time of famine have fed hereof, especially in the spring, it being but Greene; yet it is hard of digestion, and it is manifest that the nourishment that commeth thereof hath in it no good juice at all, but ingendereth a thick blood, and apt to become melancholy." This species is known as the Tare as commonly as the Vetch; in fact, it appears as though it was indifferently called one or the other by the farmers. Ray informs us that in 1686 it was then sown all over Europe, and that it was chiefly used in England, mixed with peas and oats, to feed horses, but that it was sometimes sown separately for soiling cattle, and was reputed to cause milch-cows to yield much milk. The Tare, Brown observes, is of

hardy growth, and when sown upon rich land will return a large supply of green fodder for the consumption of horses or for fattening cattle. In the county of Sussex, Young observes, "Tare crops are of such use and importance that not one tenth of the stock could be maintained without them; horses, cows, sheep, hogs, all feed upon them; hogs are soiled upon them without any other food." Upon one acre of Tares, Dames maintained four horses in much better condition than upon five acres of grass; upon eight acres he has kept twelve horses and five cows for three months without any other food whatever. No artificial food is equal to this excellent plant. A writer who quotes this opinion observes that "this statement must be coupled with the usual produce of turnips in Sussex, ten or fifteen tons per acre; hence the superiority of Tares to every other green crop." Tares cut green, Professor Thaer observes, draw no nourishment from the soil whatever, while, made into hay, they afford a fodder preferred by cattle to peas-straw, and more nutritive than hay or any other herbage. The seeds of the Tare are much used as food for pigeons and poultry. The plant is sometimes cultivated with this object, being generally sown with beans, and the two threshed out together when ripe. The seeds, like those of most European legumes, have been used as human food but are neither very palatable or digestible, though extremely nutritious.

SUB-SPECIES II.—*Vicia angustifolia*. Roth.

PLATES CCCXCIII. CCCXCIV.

Fries, Sum. Veg. Scand. p. 47. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 217.

Gr. & Godr. Fl. de Fr. Vol. I. p. 459.

V. sativa, β *angustifolia*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 111.

Stems rather stout, or slender. Leaflets of the lower leaves obovate or oblong-oblanccolate, emarginate or truncate at the apex; those of the upper leaves oblong-oblanccolate or linear, truncate or abruptly acuminate and mucronate at the apex. Stipules generally green. Flowers $\frac{1}{2}$ to $\frac{3}{4}$ inch long, with the standard reddish-purple or crimson. Pods 1 to $1\frac{3}{4}$ inch long, generally spreading, black or deep olive-brown when ripe, without imperfect cellular partitions between the seeds, which produce only indistinct bosses on the exterior of the pod. Seeds $\frac{1}{8}$ inch in diameter or less.

Var. α , *segetalis*. Koch.

PLATE CCCXCIII.

V. sativa, var. β , *Seringe*, in *D. C.* Prod. Vol. II. p. 361.

V. sativa, β , *angustifolia*, *Bab. Man.* Brit. Bot. ed. v. p. 85. *Benth.* Handbook Brit. Fl. p. 179. *Sm.* Eng. Fl. Vol. III. p. 281.

V. angustifolia, *Forster*, in *E. B. S.* No. 2614.

Stems rather stout. Upper leaves oblong. Flowers mostly in pairs. Pods $1\frac{1}{2}$ to 2 inches long, splitting the calyx.

Var. β , *Bobartii*. Koch.

PLATE CCCXCIV.

V. sativa, var. γ , *Bab. Man. Brit. Bot. ed. v. p. 85. Benth. Handbook Brit. Fl. p. 179.*

V. Bobartii, *Forster*, in *E. B. S. No. 2708.*

V. angustifolia, *Sm. Eng. Fl. Vol. III. p. 282.*

Stems slender. Upper leaves strap-shaped or linear. Flowers often solitary. Pods 1 to $1\frac{1}{2}$ inch long, not splitting the calyx.

Var. α on the borders of fields, amongst corn, by roadsides, and in recently disturbed ground or in light rich soil. Var. β in dry pastures, hedge-banks, and by roadsides. Both forms are common and generally distributed in England; more rare in Scotland, where they do not extend North of Moray.

England, Scotland, Ireland. Annual. Spring and Summer.

Very like *V. eu-sativa*, but smaller. Stems from 6 inches to 2 feet high. The upper leaves very narrow in var. β , while those of var. α approach those of *V. eu-sativa* in shape and size, though generally narrower, and less deeply notched at the apex. The flowers are smaller, and have the standard not much paler than the wings, and usually of a bright crimson. The pods are more spreading, smaller, more cylindrical, black and usually glabrous when ripe, and they have the imperfect partitions of cellular tissue between the seeds only rudimentary. The seeds are much smaller, and rather less compressed. The two varieties pass insensibly into each other, and intermediates often occur.

Common Wild Vetch.

French, *Vesce à Feuilles Étroites.* German, *Schmalblättrige Wicke.*

SPECIES XI.—VICIA LATHYROIDES. Linn.

PLATE CCCXCV.

Rootstock none. Stems decumbent, spreading. Leaves with 2 to 4 pairs of wedgeshaped-obovate, oblanceolate, or oblong leaflets, notched or truncate and apiculate at the apex; common petiole terminating in a subulate point or short simple tendril. Stipules half-sagittate. Flowers axillary, solitary, ascending. Pedicels much shorter than the calyx-tube. Calyx herbaceous, slightly hairy; tube filiform, not gibbous at the base of the upper side; teeth equal, subulate, nearly as long as the tube. Standard glabrous, rather more than twice the length of the calyx-tube, with the lamina roundish-oval. Pods ascending or spreading, sessile,

cylindrical, compressed, acuminate at the apex into a rather long sharp beak slightly curved downwards, glabrous. Seeds roundish-cubical, compressed, granulated with small prominent points; hilum oval, one-twelfth the circumference of the seed.

On sandy and gravelly pastures and waste places. Rather scarce, but generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Annual. Spring and Summer.

Very like small specimens of *V. angustifolia*, but more branched, with the stems prostrate, 2 to 8 inches long, and thickly clothed with spreading hairs. Leaflets generally about $\frac{1}{4}$ inch long, more hairy than in the last, and with the apiculus or mucro at the apex shorter. Flowers smaller, $\frac{1}{4}$ to $\frac{3}{8}$ inch long, pale-purple, with the calyx gradually attenuated to the base, and not swollen on the upper side. Pods $\frac{1}{2}$ to 1 inch long, glabrous even when young, becoming olive-black when ripe, not bossulated by the seeds. The most striking difference between this plant and *V. angustifolia* is in the seeds, which are greyish-brown, with minute raised tubercles and a very short hilum. Plant greyish-green, more or less hairy.

Spring Vetch.

French, *Vesce Fausse Gesse*. German, *Platterbsenartige Wicke*.

SECTION IV.—ARACHUS. *Medic.*

Leaves with 1 or 2 pairs (rarely 3 pairs) of leaflets. Peduncles axillary, elongated, or short, 1- to 3-flowered. Flowers in short racemes or solitary. Style bearded with a tuft of long hairs below the stigma on the outer side. Pods shortly stipitate, rather short.

SPECIES XII.—*VICIA BITHYNICA*. *Linn.*

PLATE CCCXCVI.

Lathyrus Bithynicus, *Lam. Dic. Vol II p. 706*.

Rootstock none. Stems weak, trailing or climbing. Lower leaves with 1, the others with 2 pairs or 3 pairs of elliptical, or linear-strapshaped leaflets, rather obtuse or acute and mucronate at the apex; common petiole terminating in a branched tendril. Stipules large, half-sagittate; inciso-dentate on both margins. Peduncles axillary, shorter than the leaves, or more rarely equalling them, 1- or in the latter case 2- or 3-flowered. Pedicels rather longer than the calyx. Calyx herbaceous, hairy, the tube more swollen on the upper than on the lower side; teeth unequal, triangular-subu-

late, the uppermost pair the shortest, about equal to the tube, the lower ones exceeding it. Standard glabrous, thrice as long as the calyx-tube, with the lamina oblong-oval. Pods spreading, stipitate, with the gynophore much shorter than the calyx-tube; compressed, acuminate at the apex into a rather long sharp beak, hooked downwards, sparingly clothed with short woolly hairs, with papillæ or tubercles at their basis. Seeds sub-globular, compressed, indistinctly pitted; hilum oval, one-sixth the circumference of the seed.

Var. *α*, *latifolius*.

Leaves oval or elliptical. All the stipules deeply toothed.

Var. *β*, *angustifolius*.

Leaves strap-shaped-elliptical or linear, very acute; upper stipules sparingly toothed.

On grassy banks, especially near the sea and on cliffs and bushy places. Very local. Reported from the counties of Devon, Somerset, Dorset, Sussex, Kent, Essex, Gloucester, Worcester, Glamorgan, and Denbigh; but I have met with it myself only near Leigh, Essex, and between Folkestone and Sandgate, Kent; the broad-leaved plant I possess from several places near Bristol, Somerset, and from Budleigh Salterton, Devon.

England. Annual. Spring to Autumn.

Stems growing in tufts from the crown of the root, branched only at the base; 6 inches to 2 feet long. Leaflets 1 to 2 inches long, in var. *α* often $\frac{1}{2}$ inch broad, but in var. *β* sometimes not more than $\frac{1}{8}$ inch. Peduncles $\frac{1}{4}$ to 2 inches long, generally 1-flowered, but having sometimes a pair. Flowers $\frac{3}{4}$ inch long. Standard pale dull-purple; wings white, with a blue blotch near the base. Pods $1\frac{1}{4}$ to $1\frac{3}{4}$ inch long, reddish-brown, varying to brownish-black when ripe; reticulated, faintly bossulated by the seeds. Seeds $\frac{1}{6}$ inch in diameter, dull-brownish, sometimes marbled with black. Plant dull-green, slightly glaucous, glabrous or slightly pubescent.

This plant has sometimes quite the habit of a *Lathyrus*, and has repeatedly been mistaken for *Lathyrus hirsutus*, but the wingless stem, and the leaflets of the upper leaves more than one pair, as well as the shorter peduncles and longer and narrower flowers, furnish obvious distinctions, in addition to the difference of generic character.

Bithynian Vetch.

GENUS XVII.—LATHYRUS. *Linn.*

Calyx campanulate, 5-toothed, the 2 upper teeth shorter. Standard sub-orbicular, spreading, at right angles to the rest of the flower. Stamens diadelphous, or sub-monadelphous, with the tube transversely truncate. Style bent upwards at right angles to the ovary, or curved towards the standard; channelled at the base, dilated and compressed toward the apex, hairy on the upper or inner side (sometimes apparently on the lower from the style twisting on its own axis). Pod elongated compressed, many-seeded.

Herbs, generally climbing, and scarcely distinguishable from the genus *Vicia* by their habit, though generally the leaflets are much larger, and only in one or two pairs; sometimes there are none. Flowers on elongated axillary peduncles, solitary, subsolitary, or racemose, generally large, with a very broad spreading lamina to the standard.

The origin of the name of this genus of plants is somewhat obscure. One author says it comes from *λαθυρος* of Theophrastus, which is said to be from *λα* (*la*), augmentative, and *θυρος* (*thouros*), anything exciting, in reference to the qualities of the seeds. Another writer suggests that it comes from *λοθω*, "to lie hidden;" but that does not obviously apply to the habit of the plant.

SECTION I.—APHACA. *Tournef.*

Petioles reduced to tendrils. Leaflets only present on the first leaves of seedlings, and not always even there. Calyx-tube equal and attenuated at the base; teeth longer than the tube.

SPECIES I.—LATHYRUS APHACA. *Linn.*

PLATE CCCXCVII.

Root annual. Stem climbing or trailing, angular, not winged. Leaflets none. Tendrils branched or simple. Stipules very large, ovate, truncate and slightly hastate or hastate-sagittate at the base with short auricles, obtuse at the apex. Peduncles axillary, 1-flowered. Flowers erect. Calyx-teeth strapshaped-lanceolate, nearly equal, much longer than the tube. Corolla not much longer than the calyx. Pods linear-oblong, compressed, falcate.

In cultivated ground, and waste places which have been recently disturbed; rare. In Devonshire, Dorset, Sussex, and Kent, northward to Worcestershire, Warwickshire, and Lincolnshire.

England. Annual. Early Summer to Autumn.

Stems weak, 8 inches to 3 feet long, sparingly branched, and that chiefly at the base. Leaflets very small, oval-elliptical, and only to be found on very young plants, all the later leaves being reduced to slightly-branched or simple tendrils. Stipules $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, resembling pairs of opposite leaves. Peduncles longer than the tendrils, $1\frac{1}{4}$ to 2 inches long. Flowers about $\frac{1}{2}$ inch long, pale-yellow, with the keel whitish. Calyx equal at the base, with a short tube and very long segments, the lowest one a little exceeding the others. Standard only slightly spreading. Pods 1 to $1\frac{1}{4}$ inch long, dark-brown or nearly black when ripe, ascending, slightly curved upwards, abruptly acuminate into a short sharp beak at the apex; the sides reticulated. Seeds few, roundish-cubical, compressed, smooth, slightly shining, black, or yellow mottled with black; hilum about one-tenth the circumference of the seed. Plant pale-green, rather glaucous, glabrous.

Yellow Vetchling.

French, *Gesse sans Feuilles*. German, *Nebenblüttrige Platterbse*.

The species of this genus claim kindred with the well-known Sweet Pea of our gardens, which is a native of Sicily, and whose showy flowers and sweet scent render it such a favourite everywhere. The British representatives of the family, though less attractive in appearance, are not without their charms. Our present species is often found in fields in the eastern counties, and may be considered in some measure as a useful plant, the seeds and pods having been eaten when green, made into bread, or put in broth. When ripe they are not wholesome, however, often occasioning sickness and headache.

SECTION II.—NISSOLIA. *Tournef.*

Petioles all reduced to grasslike phyllodia, without leaflets or tendrils.

SPECIES II.—**LATHYRUS NISSOLIA.** *Linn.*

PLATE CCCXCVIII.

Root annual. Stems erect or ascending, not climbing, angular, not winged. Petioles linear, without leaves or tendrils. Stipules very small, subulate. Peduncles axillary, 1- (rarely 2-) flowered. Calyx-teeth triangular-subulate, unequal, rather shorter than the tube. Corolla three times as long as the calyx. Pods narrowly cylindrical, scarcely compressed, straight, glabrous.

In grassy places and amongst low bushes. Rather rare, and confined to the South of England, apparently not wild to the North of Norfolk, Derbyshire, and Herefordshire, although it has occurred as far North as Dundee, but doubtless introduced.

England, [Scotland]. Annual. Spring and Summer.

Stems several from the crown of the root, slightly curved at the base, then erect, rather stiff, 1 to 3 feet high, simple or slightly branched. Petioles 3 to 7 inches long, resembling blades of grass. Peduncles slender, 1 to 4 inches long, bearing rarely more than 1 spreading flower. Flowers $\frac{1}{2}$ to $\frac{5}{8}$ inch long, bright-erimson with the keel paler. Calyx gibbous at the base above, the 3 lower teeth longer than the upper 2; standard with the lamina orbicular, spreading with the sides slightly reflexed, longer than the wings and keel. Pod slightly drooping, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, about the thickness of a crow-quill, the sides with longitudinal anastomosing veins. Seeds maroon or reddish-black, roundish, compressed, slightly shining, covered with small tubercles; hilum oblong, one-ninth the circumference of the seed. Plant green, the leaves glaucous above.

Before this plant comes into flower it is scarcely possible to detect it, from its close resemblance to the grasses among which it grows; the petioles, however, do not sheathe the stem as the leaves of grasses do.

Grass-leaved Vetch.

French, *Gesse sans Vrilles.* German, *Blattlose Platterbse.*

The specific name of this plant was given to it in honour of M. G. Nissolle, a French botanist, whose zeal induced him to adopt the ingenious expedient of searching the siftings of grain imported from foreign parts, by growing which he obtained many curious exotics. The leaves of the plant are so like grass, that unless it be in blossom it may readily be overlooked and mistaken for it.

SECTION III.—EU-LATHYRUS. *Seringe*, in *D. C. Prod.*

Petioles all bearing leaflets and terminating in tendrils. Calyx-tube gibbous at the base above.

SPECIES III.—**LATHYRUS HIRSUTUS.** *Linn.*

PLATE CCCXCIX.

Root annual. Stems weak, climbing or trailing, winged. Leaves with 2 or 4 pairs of elliptical or linear-elliptical leaflets, mucronate at the apex; common petiole terminating in a short branched tendril. Stipules rather small, half-sagittate. Peduncles longer than the leaves, generally 2- (but sometimes 1- or 3-) flowered. Calyx-teeth ovate-acuminate, as long as the tube. Corolla twice as long as the calyx. Pods oblong, compressed, straight, hairy; the hairs with tubercles at the base.

In bushy places and borders of fields. Very rare, and apparently confined to the southern part of the county of Essex, where it occurs in several places. I have only seen it at Hadleigh Castle,

near Southend. A specimen has been sent me labelled "*Vicia Bithynica*, Budleigh Salterton, Devon," in the handwriting of Miss Carpenter; but probably there has been some transposition of labels.

England. Annual. Summer and Autumn.

Stems 1 to 4 feet high, angular, and furnished with 2 rather narrow herbaceous strips or wings. Petioles very short. Leaflets 1 to 2 inches long, varying much in breadth, frequently there is only a single pair, but if there be a second, the leaflets are smaller than those of the lower pair; tendrils bent downwards. Stipules rather small, slender, with long acute auricles parallel to the stem. Peduncles 2 to 5 inches long, generally 2-flowered, with one flower a little above the other. Pedicels about as long as the calyx. Flowers spreading, $\frac{1}{2}$ inch long, bright-crimson, with the keel and wings paler; standard with the lamina roundish, spreading at right angles to the claw, and having the sides folded back. Style much dilated towards the stigma. Pods shortly stipitate, 1 to $1\frac{1}{2}$ inch long, much compressed. Seeds few, roundish, compressed, brown, granulated with elongate papillæ; hilum oval, one-twelfth the circumference of the seed. Plant greyish-green, slightly hairy, the pods clothed with rather long hairs with papillæ at the base.

Hairy Vetchling.

French, *Gesse Velue*. German, *Behaarte Platterbse*.

SPECIES IV.—*LATHYRUS PRATENSIS*. *Lin.*

PLATE CCCC.

Rootstock extensively creeping. Stems climbing or trailing, slightly winged. Leaves with 1 pair of elliptical or strapshaped-elliptical acute leaflets; common petiole terminating in a simple or branched tendril. Stipules large, lanceolate-ovate or lanceolate, acuminate, sagittate at the base with slender acute auricles. Peduncles axillary, longer than the leaves, 3- to 12-flowered. Flowers spreading, in a compact raceme. Calyx-teeth triangular, subulate towards the apex, slightly unequal, about as long as the tube. Corolla more than twice as long as the calyx. Pods linear-oblong, compressed, nearly straight, when mature glabrous, or clothed with short curled hairs without papillæ at their base.

In meadows, pastures, hedges, and borders of woods. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Stems angular, with wings narrower than its diameter, much

branched, 1 to 3 feet long. Leaflets on young plants oval, $\frac{1}{2}$ to $\frac{3}{4}$ inch long; on mature specimens narrower, and $\frac{3}{4}$ to $1\frac{3}{4}$ inch long, very acute at the apex. Stipules nearly as long as the petiole exclusive of the tendril. Peduncles $1\frac{1}{2}$ to 8 inches long, terminating in a compact somewhat unilateral raceme, 1 to 2 inches long. Flowers bright-yellow, $\frac{5}{8}$ to $\frac{3}{4}$ inch long; standard with the lamina sub-orbicular, spreading at right angles to the claw and having the sides reflexed, longer than the wings and keel. Style not twisted. Pods sessile, 1 to $1\frac{1}{2}$ inch long, sometimes slightly curved upwards, reticulated with oblique anastomosing veins on the sides, clothed with short curled white hairs when young, turning black and frequently becoming glabrous when ripe. Seeds globular, smooth, dim, dark-brown, or yellowish-olive marbled with black, hilum oblong, one-sixth the circumference of the seed. Plant pea-green, slightly glaucous, sparingly clothed with short adpressed hairs.

Meadow Vetchling.

French, *Gesse des Prés.* German, *Wiesen Platterbse.*

This species has been recommended as a new plant for experimental agriculturists, and premiums have been offered for its cultivation. It does not, however, seem to be very palatable to cattle, for they prefer any other fodder that is within their reach. Usually the Vetchling is regarded only as a noxious weed; and Parkinson tells us that it was called "the Ramping Wild Vetch by the country people, because it is the most pernicious herbe that can grow on the earth, killing and strangling corne or any other good herbe it shall grow by." Most farmers on moist lands would probably be of his opinion, as it runs very much, and is very difficult to extirpate.

SPECIES V.—**LATHYRUS TUBEROSUS.** *Linn.*

PLATE CCCCI.

Rootstock extensively creeping, furnished with sessile ovate-ovoid tubers. Stem climbing or trailing, not winged. Leaves with 1 pair of obovate-oval rounded apiculate leaflets; common petiole terminating in a branched tendril. Stipules small, lanceolate-acute, half-sagittate at the base with a slender acute auricle. Peduncles axillary, longer than the leaves, 2- to 5-flowered. Flowers spreading, in a lax raceme. Calyx-teeth triangular, unequal, about as long as the tube. Corolla more than three times as long as the calyx. Pods sub-cylindrical, glabrous.

In cornfields and round their borders. Very local. Known to occur only about Fyfield, near Chipping Ongar, Essex, where it was first discovered by Mr. Corder in 1859; but the farmers in the neighbourhood had noticed it for about sixty years. The Rev. W. W. Newbould has found specimens in the Sloane Herbarium in the British Museum, gathered by the Rev. J. Sedgwick in the

neighbourhood of Lincoln, "in the north field of Blankney, near the road to Lincoln."

England. Perennial. Late Summer and Autumn.

Stems weak, slender, with raised lines, but without wings, 2 to 4 feet long. Leaflets $\frac{5}{8}$ to $1\frac{1}{2}$ inch long, widest rather beyond the middle. Stipules about as long as the petiole exclusive of the tendril. Peduncles 2 to 5 inches long. Lowest calyx-tooth longer and narrower than the others. Flowers $\frac{5}{8}$ to $\frac{3}{4}$ inch long, bright-crimson. Standard with the lamina orbicular, slightly emarginate, spreading at right angles to the claw and with the sides reflexed, a little longer than the wings and keel. Style curved upwards and twisted on its own axis. Pods $\frac{3}{4}$ to $1\frac{1}{4}$ inch long, often clavate in the Fyfield plant, from the seeds towards the base being abortive; the sides have anastomosing longitudinal oblique veins. The ripe seeds I have not seen, as the corn is cut before the pods have time to arrive at maturity; but the seeds set, so that Dr. Walker-Arnott is mistaken in saying the flowers fall off without bearing fruit.—(Brit. Fl. ed. viii. p. 606.) Plant pea-green, glabrous.

This plant is remarkable for the subterranean tubers, which are 1 to 2 inches long, broadest at the sessile base, and tapering to the apex.

Tuberous Vetchling.

French, *Gesse Tubéreuse*. German, *Erdnuss*.

This showy pea is cultivated in Holland for its edible roots. Gerarde calls it the Peas-earthnut.

SPECIES VI.—**LATHYRUS SYLVESTRIS.** *Linn.*

PLATE CCCCII.

Rootstock creeping, without tubers. Stem climbing or trailing, with wings as broad as or broader than itself. Leaves with 1 pair of elliptical-lanceolate or linear-lanceolate acute mucronate leaflets; common petiole with a wing nearly as broad as itself, terminating in a much-branched tendril. Stipules lanceolate, half-sagittate at the base with a slender acute auricle. Peduncles axillary, longer than the leaves, 3- to 10-flowered. Flowers spreading, in a lax raceme. 3 lower calyx-teeth triangular, about as long as the tube; the upper pair deltoid and much shorter than the tube. Corolla more than twice as long as the calyx. Pods cylindrical-oblong, compressed, glabrous. Seeds transversely globular-ovoid, compressed, dim, black, faintly tuberculated with the tubercles separate; hilum one-half the circumference of the seed.

In bushy places, woods, and hedges, or on rocks. Local. Found in most of the English counties, but very rare in Scotland.

The most northern stations, in which it is certainly wild, are on the cliffs of the south shore of the Isle of Mull; and near the Red Head, Forfarshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Stems much branched, rather stout, broadly winged, 3 to 6 feet long. Leaflets 2 to 6 inches long, variable in breadth, 3- or 5-nerved. Stipules rather small, shorter than the petiole. Peduncles $1\frac{1}{2}$ to 10 inches long, terminated by a lax unilateral raceme. Flowers $\frac{3}{8}$ to $\frac{1}{2}$ inch long; standard with the lamina sub-orbicular, slightly emarginate, longer than the wings and keel, rose-coloured within, rose stained with green on the outside; wings purplish towards the apex; keel greenish-white. Style curved upwards, twisted on its own axis. Pods sessile, $1\frac{1}{2}$ to 3 inches long, with the upper margin convex at the base, and the lower one convex at the apex. Seeds numerous, $\frac{1}{6}$ inch in diameter, rough, with irregular tubercular ridges projecting little above the surface. Plant deep-green, slightly glaucous, glabrous.

Narrow-leaved Everlasting Pea.

French, *Gesse Sauvage*, *Pois Eternel*. German, *Wald Platterbse*.

SPECIES VII.—**LATHYRUS LATIFOLIUS.** *Linn.*

PLATE CCCIII.

Rootstock shortly creeping, without tubers. Stem climbing or trailing, with wings as broad as or narrower than itself. Leaves with 1 pair of oval-elliptical or elliptical leaflets; common petiole with a wing broader than itself, terminating in a much-branched tendril. Stipules lanceolate or ovate-lanceolate, half-sagittate at the base, with a slender acute auricle. Peduncles longer than the leaves, 5- to 10-flowered. Flowers spreading, in a rather compact raceme. 3 lower calyx-teeth triangular, about as long as the tube; the upper pair a little broader and shorter. Corolla more than twice as long as the calyx. Pods linear-cylindrical, slightly compressed, glabrous. Seeds globular, greyish, with the tubercles contiguous; hilum linear, one-fourth the circumference of the seed.

In woods and on rocky débris. Rare, and no doubt in all its stations escaped from cultivation. In many of the localities recorded for it, a broad-leaved form of *L. sylvestris* has probably been mistaken for it. I have myself only seen it on Salisbury Craigs, Edinburgh.

[England, Scotland.] Perennial. Summer.

Extremely like *L. sylvestris*; but the leaflets and stipules are usually broader in proportion to their length, which is 2 to 4 inches. The wings of the stem are not quite so broad, and those of the petiole a little broader. The flowers are more numerous, in a more compact raceme, and a little larger, being from $\frac{3}{4}$ to 1 inch long, entirely purplish-rose, with the keel paler. The pod is longer, 3 to 4 inches in length, more cylindrical, more acuminate at the apex. The seeds paler, with the tubercles more elevated, and all run together so as to present a brain-like aspect; the hilum is also considerably shorter. The plant is also paler green, and more glaucous.

Broad-leaved Everlasting Pea.

French, *Gesse à larges Feuilles.* German, *Breitblätterige Platterbse.*

This pretty and favourite climbing plant is often seen covering the doorways of cottages, the trellis-work of gardens, or creeping round the windows of some village school-house, where its beautiful flowers are with difficulty kept from marauding fingers, or its ripening pods from the omnivorous mouths that pass to and fro underneath its hanging tendrils. Nothing can be prettier than this well-known plant. Its broad leaves and juicy stems yield good fodder, and its cultivation has been recommended for this purpose; but it does not seem to be better adapted for field culture than any other of its family.

SPECIES VIII.—**LATHYRUS PALUSTRIS.** *Linn.*

PLATE CCCIV.

Rootstock extensively creeping. Stems climbing or trailing, nearly simple, winged, with the wings nearly as broad as the stem. Leaves with 2 to 3 pairs of elliptical or linear-elliptical mucronate leaflets; common petiole terminating in a branched tendril. Stipules lanceolate, very acute, half-sagittate at the base, with a triangular auricle. Peduncles axillary, longer than the leaves, 2- to 8-flowered. Flowers spreading, in a lax raceme. 3 lower calyx-teeth triangular, nearly as long as the tube; the upper pair deltoid, and much shorter than the tube. Corolla nearly three times as long as the calyx. Pods linear-oblong, compressed, glabrous. Seeds globular, smooth; hilum $\frac{1}{4}$ circumference of the seed.

In fens and boggy places. Very local. I possess it from Burtle Moor, Somerset; Belton Fen, Yarmouth; Monks Wood, Huntingdon; and the Murrow of Wicklow. It is reported, on satisfactory authority, also from the counties of Hants, Norfolk, Carnarvon, Cambridge, Lincoln, and York.

England, Scotland?, Ireland. Perennial. Late Summer and Autumn.

Stems slender, 2 to 4 feet high. Leaflets $1\frac{1}{4}$ to $2\frac{1}{2}$ inches long, varying in breadth. Stipules usually extending beyond the point

where the first leaflets are placed. Peduncles 2 to 4 inches long. Flowers $\frac{5}{8}$ to $\frac{3}{4}$ inch long, purple, fading to blue. Standard with the lamina oval-orbicular, spreading nearly at a right angle with the claw, a little longer than the wings and keel. Style suddenly bent upwards at the extremity of the ovary, not twisted on its own axis. Pod shortly stipitate, $1\frac{1}{4}$ to $1\frac{1}{2}$ inch long, rounded at the apex below, reticulated on the sides. The mature pods I have not seen, but the seeds have been sent me by the late Mr. Thomas Clark; they are $\frac{1}{8}$ inch in diameter, olive-yellow prettily marbled with black. Plant glaucous-green, glabrous.

Marsh Vetchling, Duckling Vetch.

French, *Gesse des Marais*. German, *Sumpf Platterbse*.

SPECIES IX.—**LATHYRUS MARITIMUS.** *Bigel.*

PLATE CCCC.V.

Pisum maritimum, *Linn.* *Sm.* Eng. Bot. No. 1046.

Rootstock very long, woody, creeping. Stems prostrate, quadrangular, striate but not winged. Leaves with 3 to 5 pairs of broadly oval or elliptical leaflets; common petiole terminating in a branched or simple short tendril. Stipules broadly ovate, acuminate, hastate or hastate-sagittate at the base with the 2 auricles deltoid-triangular and of unequal size. Peduncles axillary, shorter than the leaves or more rarely equalling them, 4- to 10-flowered. Flowers spreading, in a compact raceme. Three lower calyx-teeth triangular, about as long as the tube; the upper pair deltoid, acuminate, much shorter than the tube. Corolla three times as long as the calyx. Pods linear-oblong, scarcely compressed. Seeds globular, smooth; hilum one-third the circumference of the seed.

Var. α , *genuinus*.

Leaflets broadly oval, rather blunt.

Var. β , *acutifolius*. *Bab.*

Leaflets elliptical, acute. Stems more slender than in var. α .

On shingly sea-beaches. Rare. Var. α on the coasts of Dorset, Sussex, Kent, Suffolk, and Lincolnshire; and formerly near Penzance, Cornwall, and in the Isle of Wight. Var. β in the Island of Unst, Shetland, and possibly in Orkney. A form somewhat intermediate between varieties α and β is found at Rosbegh, county Kerry.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock thick, black, extending many feet down through the shingle, branching above, the branches mostly starting from the same point, slender and creeping. Stems 6 inches to 3 feet long, lying flat on the ground. Leaflets 1 to 2 inches long, mostly alternate, and diminishing in size towards the apex of the petiole, thick and somewhat fleshy, directed upwards, particularly in the evening; common petiole generally curved backwards, terminating in a very short tendril. Stipules very large, $\frac{1}{2}$ to 1 inch long, with auricles on both sides of the base. Peduncles $1\frac{1}{2}$ to 3 inches long; raceme $\frac{3}{4}$ to 1 inch long. Flowers $\frac{5}{8}$ to $\frac{7}{8}$ inch long, purplish-crimson fading to blue. Style straight, ascending at an obtuse angle with the stigma, slightly dilated upwards and hairy. Pods reflexed, shortly stipitate, $1\frac{1}{2}$ to 2 inches long, brown when ripe, nearly straight, their width nearly as great as the depth between the 2 sutures. Seeds $\frac{1}{5}$ inch in diameter, dusky-brown, paler towards the hilum, slightly shining. Plant glabrous and glaucous.

Sea Pea.

French, *Pois Maritime*. German, *Meerstrands Platterbse*.

This species of *Lathyrus* grows on shingly beaches, chiefly on the Eastern coast of England, but not very abundantly anywhere. The seeds are bitter in taste, and very unpalatable; but, in the year 1555, the people in the neighbourhood of Aldborough and Orford, in Suffolk, were kept alive during a time of famine by eating the seeds of this plant, which grew abundantly on the sand-hills of the district. Its existence had not been noticed by the inhabitants before, and they attributed its sudden appearance to an interposition of Providence for their sustenance. Some, less willing to believe in miracles, traced the origin of the plant to the wreck of a vessel laden with peas on the coast during the previous year; but, as the Sea Pea is nowhere cultivated, this seems unlikely. It is more probable that the plant had grown there for centuries; but the seeds being nauseous in flavour, and botany not being studied in this district at this period, no one had recollected the circumstance, until pressed by want to seek food among the wild herbs of the neighbouring waste. With the necessity, the estimation of the plant that had relieved it ceased, and it is now as little used as many others which might be of equal value under similar circumstances.

SECTION IV.—OROBUS. *Linn.*

Petioles all bearing leaflets, but terminating in a linear or subulate point, not a tendril. Calyx gibbous at the base on the upper side.

SPECIES X.—**LATHYRUS MACRORRHIZUS.** *Wimm.*

PLATE CCCCVI.

L. montanus, *Bernh.* *Gorcke* Fl. v. N. & Mit-Deutschl. ed. vi. p. 112.

Orobus tuberosus, *Linn.* *Sm.* Eng. Bot. No. 1153. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 225. *Fries*, Sum. Veg. Scand. p. 46.

Rootstock creeping, stoloniferous, bearing small enlarged tubers or knots. Stems erect or ascending, frequently decumbent at the

base, narrowly winged. Leaves with 2 to 3 (rarely 4) pairs of ovate-elliptical, elliptical, oblong, or linear-oblong mucronate leaflets; common petiole terminating in a setaceous point. Stipules lanceolate, half-sagittate at the base, with a triangular-acute auricle. Peduncles longer than or equal to the leaves, 2- to 6-flowered. Flowers drooping, in a lax raceme. 3 lower calyx-teeth ovate-acuminate, shorter than the tube; the upper pair much shorter, and directed upwards. Corolla three times as long as the calyx. Pods oblong-linear, sub-cylindrical, slightly compressed. Seeds globular, smooth; hilum about one-fourth the circumference of the seed.

Var. α , *genuinus*.

Leaflets varying from oval-elliptical to elliptical or oblong.

Var. β , *tenuifolius*.

Orobis tenuifolius, Roth. Fl. Germ. Vol. I. p. 305.

Leaflets varying from strap-shaped to linear.

In woods and thickets, amongst heath and in grassy places. Very common, and generally distributed. Var. β not so frequent as var. α .

England, Scotland, Ireland. Perennial. Spring and Summer.

Rootstock black, with enlargements at intervals from the size of a pea to that of a small cherry. Stems 8 to 18 inches high. Leaflets in var. α 1 to 2 inches long, blunt or suddenly acuminate at the apex—in β , sometimes 3 inches long, tapering gradually and very acute. Stipules $\frac{1}{4}$ to $\frac{5}{8}$ inch long. Peduncles 1 to 5 inches long. Flowers $\frac{1}{2}$ to $\frac{5}{8}$ inch long, pale dull-crimson fading to blue, and at length tinged with green. Pods sessile, spreading or slightly reflexed, $1\frac{1}{4}$ to 2 inches long, black when ripe, nearly as wide as the depth between the sutures. Seeds $\frac{1}{8}$ inch in diameter, reddish-brown, slightly shining. Plant deep-green, slightly glaucous, especially on the under side of the leaves, glabrous, or with a few short scattered hairs on the stipules.

This plant usually (but not always) turns black in drying.

Tuberous Bitter Vetch.

French, *Orobe tubereux*. German, *Berg Platterbse*.

SPECIES XI.—**LATHYRUS NIGER**. Wimm.

PLATE CCCCVII.

Orobis niger, Linn. Hook. in Eng. Bot. Sup. No. 2788. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 226. Fries, Sum. Veg. Scand. p. 46.

Rootstock short, without tubers or stolons. Stem erect, branched, angular, but not winged. Leaves with 4 to 6 pairs of broadly elliptical or oblong mucronate leaflets; common petiole terminating in a setaceous point. Stipules small, linear-lanceolate, half-sagittate or hastate-sagittate at the base, with a small acute auricle. Peduncles equalling or exceeding the leaves, 3- to 8-flowered. Flowers drooping, in a rather lax raceme. 3 lower calyx-teeth deltoid-triangular, not half the length of the tube; the upper pair much shorter. Corolla three times as long as the calyx. Pods linear, sub-cylindrical, slightly compressed. Seeds quadrate, compressed, smooth; hilum about one-fourth the circumference of the seed.

In rocky copses in mountainous districts. Very rare. In the Den of Airly, twelve miles west of Forfar; and in the Pass of Killierankie, Perthshire; also said to occur on Craiganain, a rock within two miles of Moy House, Inverness-shire.

Scotland. Perennial. Summer.

Stem slender, almost wiry, erect, 1 to 2 feet high. Leaflets $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, usually lanceolate-elliptical, but variable in breadth, though not nearly to the same extent as in the last species. Stipules of the lower leaves $\frac{1}{2}$ inch long; those of the upper very minute. Peduncles 2 to 4 inches long. Flowers $\frac{1}{2}$ inch long, with the claw of the petals longer than the lamina, dull purplish-crimson fading to livid blue. Pods drooping, 2 inches long, black when ripe. Seeds $\frac{1}{8}$ inch across, reddish-black. Plant deep-green, glabrous, always turning brownish-black when drying.

Black Bitter Vetch.

French, *Orobe noirissant*. German, *Schwarze Platterbse*.

EXCLUDED SPECIES.

MEDICAGO MURICATA. Willd.

Sm. Eng. Fl. Vol. III. p. 320.

Said to have been found by Ray on the coast at Orford, Suffolk; but the Rev. W. W. Newbould informs me that Ray's plant was *M. denticulata*, on the faith of the specimens in the old Herbaria.

TRIFOLIUM PARVIFLORUM. Ehrh. ?

Mr. A. G. More finds that Dr. Mackay's specimens of the plant called by him "*Trifolium maritimum*," from near Kilbarrack

church, co. Dublin, belong to this species; as, however, it is likely to be a casual introduction, it is considered best for the present to exclude it until its present existence in Ireland be ascertained.

CORONILLA VARIA. *Linn.*

Reported to have been found at Berry Head and Linton, Devonshire, and also in the Lake district; but these statements require confirmation before so conspicuous a plant can be admitted into the British list.

ORDER XXVI.—ROSACEÆ.

Herbs, shrubs, or trees, with alternate simple or compound leaves. Stipules usually conspicuous, free or more or less adhering at the base to the petiole. Flowers regular, often yellow or white, solitary, or in simple or compound corymbose cymes or panicles, more rarely in racemes, spikes, heads, or umbels. Inflorescence generally terminal. Sepals 5, more rarely 4 or 3 (or double these numbers by the addition of an epicalyx exterior to the calyx), more or less united at the base, valvate or imbricated in æstivation, the odd one superior or turned towards the axis of the inflorescence. Petals 5, more rarely 4, perigynous, caducous, sometimes absent. Stamens indefinite, rarely definite, distinct, perigynous, inserted immediately within the petals. Ovary free from the calyx, consisting of 1 carpel, or of few or numerous distinct ones; or of 2 to 5 united to each other and adhering to the calyx-tube. Ovules 1, 2, or several, anatropous. Styles lateral or terminal, free, rarely united. Fruit consisting of achenes or follicles, sometimes a drupe or a pome. Seeds 1 or more; albumen none; embryo nearly straight.

SUB-ORDER I.—AMYGDALÆÆ.

Trees or shrubs, with simple undivided leaves, having stipules not adhering to the petiole and persistent only on the barren shoots, deciduous on the flowering ones. Calyx inferior (free from the ovary), splitting in a circumcissile manner, and the greater portion deciduous. Petals white or pink. Stamens indefinite. Carpels solitary, containing 2 ovules. Style terminal. Fruit a drupe, with

the exterior portion of the pericarp fleshy or dry, separating when mature from the inner layer, which is woody and forms the so-called stone of the fruit which incloses the seed or kernel. Seed mostly solitary.

GENUS I.—PRUNUS. *Linn.*

Calyx with the tube urceolate-hemispherical, 5-toothed, the segments imbricated in æstivation, the upper part deciduous. Petals 5, spreading, inserted in the throat of the calyx. Stamens 15 to 30, inserted close within the petals. Drupe fleshy, with the stone smooth or furrowed, containing a single seed.

Trees or shrubs, with leaves varying from obovate to oblong or elliptical, serrate or crenate at the margins, generally furnished with glands on the petiole close to the base of the lamina. Stipules small. Flowers produced early, solitary, in pairs, or in umbels or racemes.

The name of this genus of plants is said to be of Asiatic origin, the wild plant, according to Galen, being called *πrouμνος* (*proumnos*) in Asia. The Greek name for the plum is *πrouνη* (*prounē*): it occurs in Theophrastus.

SUB-GENUS I.—EU-PRUNUS.

Young leaves convolute. Flowers lateral, solitary or in pairs, produced from flower-buds distinct from the leaf-buds, expanding before the leaves or at the same time with them. Drupe covered externally with a whitish bloom; stone compressed, somewhat sulcated at the margins, slightly rugose on the faces.

SPECIES I.—PRUNUS COMMUNIS. *Huds.*

PLATES CCCCVIII. CCCCIX. CCCCX.

Leaves oblong-oblongeolate, elliptical, oblong-obovate, or obovate, coarsely and bluntly serrated, appearing after the flowers or along with them. Peduncles solitary or in pairs (rarely 3 or 4 together). Fruit ovoid or globose.

SUB-SPECIES I.—*Prunus spinosa*. *Linn.*

PLATE CCCCVIII.

P. communis, α *spinosa*, *Lab. Man. Brit. Bot. ed. v. p. 91.* *Benth. Handbook Brit. Fl. p. 185.* *Hook. & Arn. Brit. Fl. ed. viii. p. 118.*

A small bushy shrub with twisted branches, most of the old ones terminating in spines, the younger ones usually pubescent. Leaves elliptical or elliptical-oblongate, at length glabrous beneath. Peduncles mostly solitary, glabrous. Flowers usually expanding before the leaves begin to appear. Petals obovate. Fruit small, sub-globular, erect.

Var. α , *genuina*.

Flowers expanding before the leaves appear.

Var. β , *coëtanea*.

Flowers appearing with the leaves.

In thickets, woods, and on commons; common, and generally distributed, but not reaching Orkney.

England, Scotland, Ireland. Shrub. Spring.

A rigid bush, commonly from 3 to 4 feet high, but sometimes 8 or 10, with irregular divaricate branches, most of them terminating in spines; bark smooth, dark-grey, or nearly black. Suckers numerous. Leaves shortly-stalked, 1 to 2 inches long, rather finely serrated. Flowers usually produced before the leaves, from buds situated on the short lateral branches or spurs. Peduncles rather long, mostly solitary, but sometimes in pairs from each bud, $\frac{1}{2}$ to $\frac{5}{8}$ inch in diameter, white. Calyx-segments broadly triangular, obtuse, often slightly serrated on the margins. Petals obovate, much longer than the calyx-segments. Filaments long, white; anthers reddish. Drupe usually a little longer than broad, about $\frac{1}{2}$ inch in diameter, bluish-black, with a glaucous bloom; pulp very austere, adhering to the stone, which is roundish, slightly compressed, with a marginal furrow and a rugose surface. Young leaves slightly downy below, at length glabrous, dark-green with the veins depressed above.

Blackthorn Sloe.

French, *Prunier Épineux*. German, *Schlehen Pflaume*.

The appearance of this tree is almost too well known to need description; and as we write in the budding spring-time, we see the pretty white blossoms of this early-flowering tree decking its black thorny polished boughs, as yet leafless, but destined to be covered with green in a few weeks more. Perhaps we ought not to speak of the Blackthorn as a tree, for only under very favourable circumstances does it attain such dimensions: usually it is only a bush or shrub. Loudon tells us that in Eastwell Park, in Kent, he has seen it growing thirty feet in height. In August the fruit, known as the Sloe, is ripe; it is covered with a bluish bloom, and looks as it hangs on the trees very tempting; but its taste is peculiarly harsh and acid, and it is only appetites sharp-

ened by hunger or the omnivorous capacities of a schoolboy, that would choose to take a second berry. The old poet calls them—

“Sloes austere,
Hard fare, but such as boyish appetite disdains not.”

When tempered with sugar, they are not so uneatable, and in some districts in the North of Europe a very tolerable conserve is made from them. The juice of the Sloe expressed is said to enter largely into the manufacture of British port wine. In France a beverage is made by fermenting the fruit with a certain quantity of water; it is acid and astringent, more especially if the fruit has been gathered before it is quite ripe. The habitual use of this drink is said to be injurious to health. The inspissated juice of the Sloe forms a nearly indelible ink used for marking linen in Germany. The leaves of this shrub dried have been made into a substitute for Chinese tea, and some years ago an extensive manufactory of this Sloe-leaf tea was carried on in this country, upwards of four millions of pounds of this substance having found its way into the market. It was discovered, however, that the chief use of this tea was for purposes of adulteration, and its manufacture was consequently speedily suppressed by the excise authorities. In France the unripe fruit is pickled in salt and vinegar as a substitute for olives, and in Germany and Russia the fruit is crushed, mixed with water, and a spirit distilled from it. Medicinally, the bark is considered to be a febrifuge, and the leaves an agreeable and useful astringent. The flowers, like all those of the native plums, are mildly aperient, and are recommended in infusion by some people as a safe and useful medicine. The wood is very hard, and in colour resembles that of the peach, though without its beauty. On account of its hard, tough nature, it is sometimes used for the teeth of rakes and such-like purposes, but it never attains size sufficient to be applied to many other uses.

The Blackthorn or Sloe has formed a subject for many of our British song-writers, and we must always associate it with the lines of the Suffolk poet Bloomfield, in which he so touchingly describes the disappointment of the poor bird-boy over his feast of roasted sloes:—

“Keen blows the blast, or ceaseless rains descend,
The half-stript hedge a sorry shelter lends.
Oh for a hovel, e'er so small or low,
Whose roof, repelling winds and early snow,
Might bring home comforts fresh before his eyes!
On whitethorns towering and the leafless rose
A frost-nipped feast in bright vermilion glows
Where clustering Sloes in glossy order rise.
He crops the loaded branch, a cumbrous prize,
And o'er the flame the sputtering fruit he rests,
Placing green sods to seat his coming guests;
His guests by promise, playmates young and gay;
But ah! fresh pastimes lure their steps away.
He sweeps his hearth, and homeward looks in vain,
Till, feeling disappointment's cruel pain,
His fairy revels are exchanged for rage;
His banquet marred, grown dull his hermitage.
The fields become his prison till on high
Benighted birds to shadiest coverts fly.

Look then from trivial up to greater woes,
 From the poor bird-boy with his roasted Sloes,
 To where the dungeoned mourner heaves the sigh,
 Where not one cheering sunbeam meets his eye.
 Though ineffectual pity thine may be,
 No wealth, no power to set the captive free,
 Thy slights can make the wretched more forlorn,
 And deeper drive affection's barb'd thorn.
 Say not, 'I'll come and cheer thy gloomy cell
 With news of dearest friends, how good, how well ;
 I'll be a joyful herald to thine heart,'
 Then fail, and play the worthless trifler's part."

SUB-SPECIES II.—*Prunus insititia*. Linn.

PLATE CCCCIX.

P. communis, β *insititia*, *Bab. Man. Brit. Bot. ed. v. p. 91.* *Benth. Handbook Brit. Fl. p. 185.* *Hook. & Arn. Brit. Fl. ed. viii. p. 118.*

A large shrub with nearly straight branches, only a few of the old ones terminating in spines, the younger ones downy. Leaves oblong-obovate or obovate, pubescent beneath. Peduncles mostly in pairs, downy. Flowers expanding as the leaves begin to appear. Petals roundish. Fruit large, globular, drooping.

In thickets, woods, and hedges; not uncommon in England, more rare in Scotland, and probably not wild north of the Forth and Clyde.

England, Scotland, Ireland. Shrub. Spring.

Very like the common sloe, which appears to pass into it by insensible gradations. The present sub-species, however, is generally of larger growth, with the leaves and flowers considerably larger; the former broader with the broadest part generally beyond the middle, and the underside remaining pubescent; the latter $\frac{3}{4}$ inch in diameter. The peduncles are not so often solitary, but in both forms they vary from 1 to 3 or 4. The petals are broader, the fruit much larger— $\frac{3}{4}$ inch or more, and drooping from its weight, bluish-black, rarely yellow; it has not the austere taste of the sloe.

Bullace.

French, *Prunier Sauvage*. German, *Haferschlehe*.

When in blossom, this tree can hardly be distinguished from the Blackthorn, and the fruit is very similar, having the same acid qualities, but not so rough, and when boiled with sugar it is by no means unpleasant. A variety yields white fruit, so that we have the white and the black Bullace. The fruit of this plum is known in Dauphiné under the name of *alfatores*, and in Provence they are called *sibarellas*, because it is impossible to whistle after having eaten them, from their sourness. The wood, the branches, and the entire plant are used throughout France for the same purposes as that of the Sloe.

SUB-SPECIES III.—*Prunus domestica*. *Linn.*

PLATE CCCCX.

P. communis, γ *domestica*, *Bab. Man. Brit. Bot. ed. v. p. 91.* *Benth. Handbook Brit. Fl. p. 185.* *Hook. & Arn. Brit. Fl. ed. viii. p. 119.*

A small tree with rather straight branches without spines, the young ones glabrous. Leaves obovate, at length glabrous beneath except on the midrib. Peduncles mostly in pairs, glabrous. Flowers usually expanding as the leaves begin to appear. Petals roundish. Fruit large, ovoid, or sub-globular, drooping.

In hedge-rows, not uncommon, but having very little claim to be considered as truly native.

[England, Scotland, Ireland.] Tree. Spring.

This form bears nearly the same relation to *P. insititia* as the latter does to *P. spinosa*. The leaves are broader than those of *P. insititia*, and 3 inches long. The flowers 1 inch in diameter and the fruit nearly as much across.

Wild Plum.

French, *Prunier Domestique*. German, *Gemeine Pflaume*.

This tree, so common in its cultivated state in all our gardens, is found apparently wild in woods and hedges in England; but the circumstance that it was not known to the early inhabitants of our island leads to the supposition that it is not truly of native growth. The variety called the Orleans Plum appears to have been brought from France shortly after our conquest of that country under the Plantagenets, and was probably for some time the only kind grown, though in 1573 Tusser enumerates ten varieties as being cultivated: Gerarde, some twenty years later, had sixty sorts growing in his garden in Holborn. Most of our older varieties of Plums have been introduced from France; that known as "Greengage," from the name of its first cultivator, was brought by him from the garden of the Chartreuse in Paris, having been originally introduced by Claude, the queen of Francis I.; and hence it is still known in France as "Reine Claude." The number and variety of the Plums which are cultivated in gardens, and which appear on our tables, are too great even to mention. Besides being eaten fresh, and forming a delicious dessert, Plums are extensively grown on the Continent for the purpose of drying, and are then known by the name of Prunes, or French Plums. The best Prunes are made near Tours, of the St. Catherine Plum and the Prune d'Agen, and the best French Plums are made in Provence of the Perdrigon Plum and the Bignole. Prunes are prepared by being gathered from the trees when just ripe enough to fall when the tree is shaken. They are then laid on frames and exposed to the sun until they become as soft as ripe medlars, after which they are put in a cool oven, shut quite close, and left for twenty-four hours (this process is repeated three times); they are then left to get cold, and rounded by the hand. The common sorts of Prunes are made from windfalls and the fruit which falls from the trees after shaking; but the best French Plums are gathered in the morning before the sun rises, care being

taker that only the stalk is touched, and the fruit gently laid on vine-leaves in a basket. When the baskets are filled so that the Plums touch each other, they are removed into the fruit-room and treated in the way described before, but so carefully that the bloom is retained on the fruit even after it is dry. Prunes have a medicinal reputation, and are retained in the British Pharmacopœia in the preparation known as Lenitive Electuary. They are also frequently used in domestic medicine as gentle and pleasant aperients with senna and such-like combinations. In some parts of Germany a spirit is distilled from Plums, known by the names of Zwetschen Wasser and Raki. Both these liquors resemble Kirsch Wasser. Raki is made by fermenting apples, ground or crushed, with bruised Plums. The spirit produced it said to be very agreeable to the taste, and, though not so strong, to be more wholesome than brandy. In the south of France an excellent spirit is obtained from the bruised pulp and kernels of Plums fermented with honey and flour by distillation in the usual manner. The wood of the Plum is very compact and hard, and is used for many purposes, especially in the manufacture of musical instruments; but it does not often attain a large size. The bark yields a yellow dye which is readily taken by woollen fabrics.

SUB-GENUS II.—CERASUS. *Tournef.*

Young leaves simply folded. Flowers lateral or pseudo-terminal, in pairs, umbels, or racemes, expanding at the same time as the young leaves or after them. Drupe glabrous externally; stone subglobular, smooth.

SECTION I.—EU-CERASUS. *Torrey & Gray.*

Flowers from lateral leafless buds appearing before or with the leaves. Pedicels umbellate, fascicled.

SPECIES II.—PRUNUS AVIUM. *Linna.*

PLATE CCCCXI.

Bromfield, Fl. Vect. p. 142.

P. Cerasus, var. Avium, Benth. Handbook Brit. Fl. p. 185.

A tree producing a few suckers. Leaves flaccid, drooping, oval or obovate-oval, abruptly acuminate-cuspidate at the apex, irregularly crenate-serrate on the margins, hairy on the veins beneath. Umbels sessile, lax, mostly aggregated round the leaf-buds, surrounded by scales, of which the inner ones are not truly leaf-like. Calyx-tube turbinate, contracted at the top. Segments oblong, entire, sub-acute. Petals flaccid, spreading in the form of a cup.

In woods and hedges, not uncommon, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Tree. Spring.

A tree not unfrequently 20 to 30 feet high, and sometimes considerably more, with a single trunk covered with smooth greyish bark. Branches spreading, arranged so as to form a rounded head. Leaf-stalk shorter than the lamina, with a gland at the base of each side of the latter, which is 2 to 6 inches long, widest usually a little beyond the middle; coarsely serrate, with the serratures rounded and tipped by a gland. Stipules linear-triangular, ciliated, with stalked glands, deciduous. Flowers expanding very shortly after the young leaves appear; white, $\frac{3}{4}$ inch across. Peduncles 3 to 5 together, $1\frac{1}{2}$ to 2 inches long, drooping. Calyx-segments reflexed. Petals more or less deeply notched, very fugacious. Fruit $\frac{5}{8}$ inch long, red or black, sub-globular, indented at the apex, bitter; stone sub-globose, slightly compressed, smooth, adhering to the pulp. Leaves bright-green, flaccid.

Wild Cherry. Gean.

French, *Cerisier Mérisier*. German, *Vogelkirsche*.

This tree is the parent of many of our garden Cherries, and is found commonly in woods and thickets in many parts of Great Britain. The cultivated Cherry was introduced into our island by the Romans at an early period of their occupation; for Pliny says: "The Cherry did not exist in Italy until the victory of Lucullus over Mithridates, in the year of the city 680. He was the first to introduce this tree from Pontus, and now, in the course of 120 years, it has travelled beyond the ocean, and arrived even in Britannia." It is probable that the wild Cherry is indigenous to both Europe and Asia, but it is unquestionable that the improved and cultivated variety came from the East. It is said that the Cherries originally brought into Italy by Lucullus came from Cerasus or Cherasond, in Pontus; but it is doubtful whether the Latin name *Cerasus* was derived from that place, or whether the town did not owe its own appellation to the abundance of Cherries in its neighbourhood, for the Persian word for the fruit is *keras*. It is very likely that many of our wild Cherries in the southern counties have grown from kernels scattered by birds, which are very fond of the fruit, the blackbird especially being a well-known depredator of the Cherry orchard. In the time of Evelyn the tree was as common in the woods as it is now: he speaks of it as "frequent in the hedges, and growing wild in Hertfordshire and many places." Tradition says that the first Cherry orchards were planted in Kent, a county still celebrated for its beautiful Cherries. Lydgate, who wrote in 1415, speaks of Cherries being exposed for sale in the London market. Gerarde, in his "Herbal," published in 1597, says there were numerous varieties of Cherries in his time. Among others he mentions the black wild Cherry, the fruit of which he says had a "harsh, unpleasant taste," and the Flanders or Kentish Cherry, of which he says, when they are thoroughly ripe, "they have a better juice, but watery, cold, and moist." In the survey and valuation made in 1649 of the manor and mansion belonging to Henrietta Maria, queen of Charles I., at Wimbledon, in Surrey, previous to its sale during the Commonwealth, it appears that there were upwards of two hundred Cherry-trees in the garden. The number of varieties now cultivated in our gardens and sold in the great fruit markets of England must be very great. Some years ago forty different sorts were enumerated, and no doubt their number has now increased. In Don's "Gardener's Dictionary," indeed, we find fifty sorts mentioned under the names of Bigareaus Hearts.

In France the Cherry is highly prized, not only as a fruit pleasant and delicious to the taste, but as affording food to the poor, and a law was passed so long ago as 1669 commanding the preservation of all Cherry-trees in the royal forests. This edict caused such a superabundance of Cherry-trees as to allow no room for the growth of under-wood, when, going to the other extreme, all the fruit-trees were cut down excepting some young saplings; and Bose tells us that this great calamity for the poor caused considerable distress to many who had subsisted for several months of the year directly or indirectly on the produce of the *mérisier*. Soup made of the fruit with a little bread and a little butter was the common food of the woodcutters and charcoal-burners of the forest during the winter. Cherries enter much more largely into the diet of our continental neighbours than into our own. We constantly hear of Cherry cakes and Cherry wine, and the common spirit of the Continent, Kirschwasser, is distilled from them after fermentation. For the manufacture of this spirit, which is made chiefly in Alsace in France, in Urtenberg in Germany, and in Berne and Basle in Switzerland, the wild black-gean is preferred. Maraschino is also made from the Cherry, much in the same way as Kirschwasser. The kind of Cherry preferred for this purpose is a small acid fruit called *marasca*, which abounds in the north of Italy, at Trieste, and in Dalmatia. The chief difference in the manufacture of Maraschino from Kirschwasser is the mixture of honey with the distilled juice in the former. Loudon tells us that genuine Maraschino is as difficult to meet with as genuine Tokay, and that a large quantity of such as is sold is nothing more than Kirschwasser mixed with honey and water. Noyau and Ratafia are flavoured with the kernels of the Cherries, and we believe that the leaves are often admitted into the preparation, and add to the flavour and perfume. In this country we use Cherries as pleasant additions to the luxuries of our table, not only freshly gathered from the trees, but in the shape of Cherry brandy, preserved Cherries, and "Cherry pie," so celebrated in nursery song, as the promised treat to Jenny Wren, when Cock Robin says,—

"If you will but be mine,
You shall dine on Cherry pie, and drink nice currant wine."

In nursery mythology the Cherry-tree is a favourite tree, and for some unknown reason is associated with the cuckoo. It is still the custom in some districts for children to dance round a Cherry-tree singing:—

"Cuckoo Cherry-tree,
Come down and tell to me
How many years I have to live."

Each child then shakes the tree, and the number of Cherries that fall is supposed to be the answer to the question. One of our earliest English games was called Cherry-pit, and consisted of pitching cherry-stones into a little hole, much as marbles are sometimes played. Shakespeare alludes to it in "Twelfth Night." Sir Toby Belch says: "Tis not for gravity to play at cherry-pit with Satan."

The gum of the Cherry-tree has the same properties as gum-arabic, but differs from it in not dissolving in cold water. It is known to chemists as *cerasin*. Hasselquist relates that a hundred men were kept alive during a siege of two months by the gum of the Cherry alone: this is highly incredible, however, as it contains little or no nitrogenous matter.

The wood of the wild Cherry is fine, close-grained, strong, and of a reddish colour. It is easily worked, and takes a fine polish. It is much sought after by cabinet-makers and turners, particularly in France, where mahogany is not so common as in Britain.

As a tree the wild Cherry is valuable not only for its timber, but for the food which it supplies to birds, by the increase of which little creatures the insects which attack trees and grain of every kind are destroyed. The folly which would exterminate these feathered friends, grudging them a share of the abundance of an orchard, is well repaid by a plague of insects of every kind which devastate whole acres of cultivated land, and destroy far more than an army of little birds would require to refresh and gladden us with their sweet songs, as well as to rid us of the swarms of insects which without their aid are so sure to multiply and infest our gardens and orchards. On the Continent Cherry-trees are much used as roadside trees, particularly in the north of Germany, where the apple and the pear will not thrive. In some countries the road passes for miles through an avenue of Cherry-trees; and Loudon tells us that he travelled for several days through an avenue of Cherry-trees from Strasburg by a circuitous route to Munich. These avenues in Germany are planted by desire of the respective governments, not only to shade the traveller, but to afford him refreshment on his journey. All persons are allowed to partake of the Cherries, on condition of their not injuring the trees; and when it is desired by the proprietor of the land on which they grow to retain the fruit of any particular tree, the fact is notified by tying a wisp of straw on one of the conspicuous branches; and this indication is almost universally respected.

The Cherry-tree has always been a favourite with poets and lovers of song. The whiteness and profusion of the blossoms, the rich bright colour of the fruit, and the vigorous nature of its growth, are all sources of attraction. The old English song of "Cherry ripe" is familiar to us all, and had its origin in one by Herrick. In Cambridgeshire, at Ely, when the Cherries are ripe, numbers of people repair, on what they call Cherry Sunday, to the Cherry-orchards in the neighbourhood, where, on the payment of sixpence each, every one is allowed to eat as many Cherries as they choose. A similar *fête* is held at Montmorency. A like festival is also annually held at Hamburg, called the Feast of Cherries, during which troops of children parade the street with green boughs ornamented with Cherries. The origin of the *fête* seems to have been thus:—In 1432, when the city of Hamburg was besieged by the Hussites, one of the citizens, named Wolf, proposed that all the children in the city between seven and fourteen years of age should be clad in mourning and sent as suppliants to the enemy. Procopius Nasus, chief of the Hussites, was so moved by this spectacle, that he not only promised to spare the city, but regaled the young suppliants with Cherries and other fruits, and the children returned crowned with leaves, shouting "Victory," and holding boughs laden with Cherries in their hands.

SPECIES III.—*PRUNUS Cerasus*. Linn.

PLATE CCCCXII.

Bromfield, Fl. Vect. p. 144.

A bushy shrub, producing very numerous suckers. Leaves firm, erect, oval or obovate-oblong, rather gradually acuminate or acuminate-cuspidate at the apex, very irregularly crenate-serrate on the margins, at length nearly glabrous. Umbels mostly scattered, fastigiate, surrounded by scales, of which the inner ones become leaf-like. Calyx-tube bellshaped-obconical, not contracted

at the top. Segments oblong-ovate, serrated, very blunt. Petals firm, spreading very widely.

In hedges, thickets, and on bushy slopes. Local and rare, except in the South of England. It occurs in the counties of Cornwall, Devon, Dorset, Hants, Sussex, Kent, Surrey, Bucks, Essex, Cambridge, Salop, Pembroke, Denbigh, Leicester, Cheshire, and Cumberland.

England, Ireland. Shrub. Spring.

This shrub bears much general resemblance to *P. Avium*, but the mode of growth is quite different, being a bush with numerous much-branched stems; the bark is redder, the leaves stiffer, more shortly stalked, shorter, generally not above 3 or 4 inches long, less abruptly pointed, more finely and more unequally serrated, every second or third tooth being twice or thrice as deep as the others; the veins are also less downy beneath. Peduncles stiffer, and consequently not drooping. Flowers rather larger and more open. Calyx-tube more open at the mouth; segments broader, blunter, and serrated. Petals less notched. The fruit I have not seen, but it is said to be "subdepresso-globose, scarcely cordate, red, juicy, and acid."—(Bromfield, *Fl. Vect.* p. 146.)

Dwarf Cherry.

French, *Prunier Cerise*. German, *Sauerkirsche*.

This appears to be the origin of the Morello Cherry of the gardens. In its wild state the fruit is very small and acid in flavour. It is a mere shrub, seldom more than eight or ten feet high. The large white flowers appear with the leaves early in May.

SECTION II.—*PADUS*. *Torrey & Gray.*

Flowers in racemes terminating leafy branches, appearing after the evolution of the leaves. Leaves deciduous.

SPECIES IV.—**PRUNUS PADUS.** *Linn.*

PLATE CCCCXIII.

A large shrub or small tree. Leaves ovate or obovate-ovate, notched at the base, abruptly acuminate, cuspidate at the apex, finely and sharply serrated on the margins. Flowers numerous, in racemes which are at first erect, afterwards pendulous, and again erect in fruit.

In woods and thickets. Sparingly but generally distributed throughout the kingdom, though possibly introduced in many of its stations. It does not extend to Orkney.

England, Scotland, Ireland. Tree. Early Summer.

A tree or shrub generally 10 to 20 feet high, with smooth purplish-brown bark. Leaves shortly stalked, 2 to 4 inches long, unequal and generally subcordate at the base, much more finely and sharply serrated than in any of the preceding, glabrous except in the axils of the lateral veins beneath. Stipules linear, fringed, deciduous. Racemes 3 to 5 inches long, with a few leaves at the base. Flowers white, $\frac{5}{8}$ inch across, very numerous, on short erect pedicels, $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Calyx very open at the mouth, with reflexed deltoid fringed segments. Petals roundish-ovate, erose. Fruit $\frac{3}{8}$ inch long, black, bitter; stone sub-globose, uneven.

Bird Cherry.

French, *Prunier à Grappes*. German, *Altkirsche*.

The Bird Cherry is a small tree with long pendulous racemes of white flowers, opening in May. It grows well in woods, groves, and fields, on a dry soil, but it is more abundant in the northern than in the southern counties. The fruit is small, black, and austere; but, though bitter and unpleasant when eaten, it is used in Scotland to give flavour to gin, whiskey, and other spirits. Birds relish the fruit greatly; hence its common name; and caterpillars are said to attack the leaves of this tree more than those of any other of the genus. In Belgium, where the tree is particularly abundant in the woods, and where caterpillars are collected at certain seasons, in conformity with the provincial laws established for the preservation of forests, this tree is always found to have suffered most from their depredations. Hence, a writer in a Belgian agricultural journal recommends planting in orchards one Bird Cherry in every square of 100 or 200 yards, to which tree, he says, all the moths and butterflies will be attracted, and on which they will lay their eggs. The appearance of the Bird Cherry, he says, will soon become hideous, but the fruit-trees will be safe.

A decoction of Bird Cherries is astrigent, and has been used successfully in medicine. The leaves yield a quantity of Prussic acid by distillation. When the tree attains a sufficient size, the wood is valuable, being beautifully veined, and is much sought after in France by cabinet-makers and turners, who increase the beauty of its markings by sawing the trunk diagonally instead of parallel with its length.

SUB-ORDER II.—ROSEÆ.

Herbs or shrubs, with simple or compound leaves. Stipules adhering to the petiole, persistent. Calyx inferior (free from the ovary), persistent or more rarely the segments deciduous. Petals yellow, white, pink, or red. Stamens indefinite or definite. Carpels free, distinct, usually numerous, rarely reduced to 2 or 1, each carpel containing 1, 2, or more ovules. Styles often lateral. Fruit composed of distinct achenes, which are usually dry, often numerous, and arranged upon a conical, hemispherical, or rarely an excavated receptacle, more rarely of a number of small drupes cohering together, or of several dehiscent follicles.

TRIBE I.—SPIRÆIDÆ.

Shrubs or herbs, with simple or interruptedly pinnate leaves. Calyx widely bell-shaped. Petals white. Stamens indefinite. Carpels in a single whorl, generally 5, but sometimes reduced to 1 or 2. Fruit consisting of follicles, dehiscent on the inner suture, or splitting into 2 valves. Styles terminal. Seeds 2 to 6 (more rarely 1 to 10) in each carpel.

GENUS II.—SPIRÆA. *Linn.*

Flowers perfect or sometimes polygamous. Calyx-tube concave or bell-shaped, 5-cleft, persistent, the segments separate in æstivation, without an epicalyx. Petals 5, obovate or roundish, with short claws inserted in the throat of the calyx, spreading. Stamens 10 to 20, more rarely 30 to 60, exserted. Carpels 5, more rarely 3 to 12, free, sessile or shortly stipitate. Fruit of as many follicles as there are carpels.

Shrubs with simple, entire, serrate, or lobed leaves, with or without stipules; or herbs with interruptedly-pinnate or palmate leaves with stipules; or herbs with tripinnate leaves and no stipules.

The derivation of the generic name of these plants is said to be from *speira*, a cord, in reference to the flexibility of the branches of some of the species, or from the Greek *σπειραιω* (*speirao*), I become spiral, or wreath, in allusion to the fitness of the plants to be twisted into garlands.

SECTION I.—EU-SPIRÆA. *Torrey & Gray.*

Shrubs with entire or serrate shortly stalked exstipulate leaves. Flowers perfect, in corymbs or panicles. Ovaries free at the base, containing numerous ovules. Ovules pendulous. Disk combined with the tube of the calyx, free at the margin, mostly crenate, with glandular teeth or lobes. Follicles not inflated. Seeds generally with a loose membranous testa, attenuate at each end.

SPECIES I.—SPIRÆA SALICIFOLIA. *Linn.*

PLATE CCCCXIV.

A bushy shrub, producing numerous suckers. Leaves shortly stalked, elliptical or lanceolate-elliptical, sharply serrate at the margins, glabrous beneath, without stipules. Flowers in dense terminal panicles, which have the branches short and with the

flowers arranged on them in very short dense racemes. Calyx-segments deltoid, reflexed. Carpels 5, glabrous.

In moist woods and thickets, and by the sides of streams. Rare, and probably not native, though occurring in many of the northern counties of England, and still more frequently in Scotland.

[England, Scotland.] Shrub. Late Summer
and Autumn.

A bushy shrub with slender branches, clothed with smooth reddish-brown bark. Leaves 2 to 3 inches long, on petioles about $\frac{1}{4}$ inch long; margins sometimes simply serrated, sometimes unequally or doubly so, with the teeth generally acute, tipped by a callous point. Panicles terminating the branches, 2 to 5 inches long. Flowers $\frac{3}{8}$ inch across, pink or nearly white [in the white variety the lateral branches of the panicle are usually more elongated, and the leaves doubly serrated]. Calyx-segments about as long as the cup-like tube, deltoid-ovate, ciliated, with short curled hairs. Leaves bright-green, nearly glabrous, those at the base of the branches of the panicle, bracts, axis of the inflorescence, and peduncles more or less woolly.

Willow-leaved Spiræa.

French, *Spirée à Feuilles de Saule.* German, *Heidenblattriger Spierstaude.*

This species has long been cultivated in gardens and shrubberies under the name of *Spiræa frutex*.

SECTION II.—ULMARIA. *Mönch.*

Herbs with interruptedly - pinnate stipulate leaves. Flowers perfect, in paniculate or corymbose cymes. Ovaries free at the base, containing about 2 pendulous ovules. Disk obsolete. Follies not inflated, straight or contorted.

SPECIES II.—SPIRÆA ULMARIA. *Linn.*

PLATE CCCCXV.

Herbaceous. Root-fibres not enlarged. Leaves pinnate, with 5 to 9 pairs of unequal leaflets; larger leaflets ovate, acute, doubly serrate, or slightly lobed and serrate, the alternate ones very small, roundish, inciso-dentate, the terminal one larger than all the others, 3-cleft, all pubescent, and usually hoary tomentose beneath. Stipules of the radical leaves with an elongated acute free apex, those of the stem-leaves half-ovate, cordate, sharply dentate. Flowers in a compound corymbose cyme, with the lower branches erect, much

longer than the upper, and overtopping them. Petals with the lamina orbicular. Follicles 5 to 9, glabrous, contorted.

In wet meadows and by the side of water. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Rootstock shortly creeping. Stem erect, furrowed, purplish, 2 to 4 feet high, simple or slightly branched. Radical leaves often very long, with the leaflets distant; larger leaflets $1\frac{1}{2}$ to 3 inches long, the smaller ones $\frac{1}{4}$ to $\frac{1}{2}$ inch, the terminal one resembling 3 of the larger leaflets united together. Stem-leaves much shorter than the radical ones, with the leaflets closer together and smaller. Cyme 4 to 8 inches long, with the exterior branches long and naked at the base, ascending so as to appear a continuation of the stem, so that the inflorescence at first sight appears to be a panicle. Flowers $\frac{1}{4}$ to $\frac{3}{8}$ inch across, cream-white. Calyx-segments ovate, reflexed. Stamens longer than the petals. Carpels falcate, contorted, olive-green. Stem glabrous, branches of the panicle pubescent. Leaves deep-green, sub-glabrous above, usually white with a dense covering of felted hairs beneath; but the radical leaves are sometimes destitute of this hoary covering, and are merely pubescent especially on the veins.

Meadow-sweet, Queen-of-the-Meadow.

French, *Spirée Reine des Prés*. German, *Achtes Mädesüss*.

We find in Dr. Prior's work on the "Popular Names of British Plants," that the name "Meadow-sweet" is ungrammatical and ridiculous, a corruption of Meadwort—the mead or honey-wine herb. Hill tells us, in his "Herbal," that "the flowers mixed with mead give it the flavour of the Greek wines;" and this is unquestionably the source of the word. Nennich also says that it gives beer and various wines and other drinks an agreeable flavour. The Latin *Regina prati*, meadow's queen, seems to have misled our herbalists to form a strangely compounded name now in use. Mead and the old German *medo* is an intoxicating drink, and a word that indicates the Asiatic origin of "the beverage of the North." This may be very proper criticism, but we are inclined to think that there is no difficulty in accounting for the common name of this plant to any one who has inhaled its sweet perfume in the meadows where it grows. Surely its little flowers do render the "meadows sweet;" and if we read old Gerard's opinion, we easily trace the very early origin of this suggestive name, and we can sympathize with our ancestors, who prized such fragrant herbs as perfumed their chambers, before the more costly custom of carpets was introduced. He says: "The leaves and flowers far excel all other strowing herbs for to decke up houses, to strowe in chambers, hals, and banquetting houses in the summer time, for the smell thereof maketh the hart merrie, delighteth the senses; neither doth it cause headache, or loathsomnesse to meate, as some other sweete-smelling herbes do."

"'Mid sweets as varied as the scene,
Distinct is thine, fair Meadow's Queen,
With buds of pearly dye.

Graceful thy foliage and thy hue,
 In softest shades of green and blue,
 Attracting still a closer view,
 They fix the admiring eye."

The green parts of the herb partake of the aromatic character of the flowers, when rubbed or chewed. The flowers infused in boiling water give it a very fine flavour, which rises in distillation. Gerarde tells us: "It is reported that the floures boiled in wine and drunke, do take away the fits of a quartaine ague, and make the heart merrie. The distilled water of the floures dropped into the eies, taketh away the burning and itching thereof, and cleareth the sight."

SPECIES III.—*SPIRÆA FILIPENDULA*. *Linn.*

PLATE CCCCXVI.

Herbaceous. Root-fibres with ovoid tubercular enlargements. Leaves pinnate, with very numerous pairs of unequal leaflets; larger leaflets oblong or strap-shaped, pinnatifid, with the segments frequently toothed, the smaller ones merely toothed (sometimes the large ones are opposite each other, and alternate with the small ones; more frequently each small one is placed opposite a large one, and the arrangement of each kind is alternate); all glabrous beneath. Stipules of the radical leaves wholly adnate, oblanceolate, those of the stem-leaves half-oblong, cordate, dentate. Flowers in a compound corymbose cyme, with the lower branches ascending, not much overtopping the interior ones. Petals with the lamina obovate. Follicles 6 to 12, downy, straight.

In dry pastures and among bushes, especially in calcareous and trap districts. Not uncommon in England, becoming rarer towards the North-west. Scarce in Scotland, where it is confined to the East coast, though extending as far North as Forfarshire.

England, Scotland, Ireland. Perennial. Summer.

Rootstock emitting numerous fibres with clavate or bead-like enlargements. Stem erect, 1 to 3 feet high, deeply striated, green or purplish. Radical leaves numerous, with very many pinnæ; larger leaflets $\frac{1}{2}$ inch long, the alternate small ones $\frac{1}{8}$ to $\frac{1}{4}$ inch, the terminal one trifid but not equalling 3 of the larger leaflets as its lateral divisions are smaller than the central. Cyme more evidently corymbose than in *S. Ulmaria*, the lower branches $1\frac{1}{2}$ to 5 inches long. Flowers $\frac{1}{4}$ to $\frac{5}{8}$ inch across, cream-white, frequently tinged with reddish on the outside. Calyx-segments ovate, blunt, reflexed in flower. Stamens shorter than the petals, which are attenuated into short but conspicuous claws. Follicles not con-

torted, clothed with short bristly hairs. Calyx-segments slightly hairy inside. Plant otherwise glabrous, deep-green.

Dropwort.

French, *Spirée Filipendule*. German, *Knollentragendes Mädesüss*.

Dr. Withering says that the common name of this plant is suggested by the tuberous pea-like roots hanging by slender threads, which, when dried and reduced to powder, make a kind of bread, which in times of scarcity is not to be despised. Hogs are very fond of these roots. In cultivation this plant is a pretty addition to the flower-garden, and will grow in any kind of soil, preferring, however, a moist situation.

TRIBE II.—SANGUISORBEÆ.

Herbs, rarely undershrubs or shrubs, with simple, digitate, or more commonly pinnate leaves. Calyx bell-shaped or funnel-shaped, contracted at the throat; segments persistent. Petals none, or rarely present and then yellow. Stamens definite, 1, 2, or 4 in number, or indefinite. Carpels 1 to 4, enclosed in the tube of the calyx, but not adhering to it. Style lateral or terminal. Fruit of 1 to 4 dry achenes, enclosed in the indurated tube of the calyx.

GENUS III.—AGRIMONIA. *Tournef.*

Flowers perfect. Calyx-tube turbinate, with an annular contraction at the throat extending on the outside into a ring bearing numerous rows of slender hooked spines, 10-furrowed and indurated at maturity; segments 5, connivent after flowering, in a single row. Petals 5, inserted in the throat of the calyx. Stamens 12 to 20, inserted immediately within the petals. Ovaries 2, rarely 3. Styles terminal, exserted. Achenes 1 or 2, rarely 3, enclosed in the hardened tube of the calyx.

Perennial herbs, with alternate interruptedly-pinnate leaves, and foliaceous stipules adnate to the petiole. Flowers yellow, in terminal spike-like racemes.

The derivation of the name of this genus is variously given by different writers. Perhaps the most reliable statement is that it comes from the word *αγρως*, wild, from its abundance in fields and hedges. It is said also to be a corruption of *argemone*, a name given by the Greeks to a plant which was supposed to cure cataract of the eye, from *αργος* (*argos*), white, the cataract of the eye being a white film.

SPECIES I.—AGRIMONIA EUPATORIA. *Linn.*

PLATE CCCCXVII.

Stem erect, simple or slightly branched. Leaves pinnate, with the alternate pairs of leaflets much smaller than the others; leaflets

oblong-oval or elliptical, inciso-crenate-serrate, downy above and more densely so beneath, where they are pilose on the veins but without glands. Stipules half-lunate, inciso-serrate. Fruit-calyx cylindrical-obconic, with 10 deep furrows extending nearly to the base, surmounted by a ring bearing several rows of hooked spines, containing usually only a single achene; segments connivent, sub-acute.

In dry thickets, hedge-banks, sides of fields, and waste places. Not uncommon, and generally distributed, except in the extreme North of Scotland.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock flexuous, not creeping. Stem 1 to 3 feet high, angular, branched in large specimens. Leaves numerous, situated principally towards the base of the stem; leaflets increasing in size towards the apex of the leaf, where they are 1 to $1\frac{1}{2}$ inch long, with 5 to 9 deep incisions on each side between the teeth, which are sub-acute, but with rounded sides. Stipules large, very slightly adnate. Racemes terminal, short while in flower, but lengthening much in fruit, till the principal one occupies half the height of the plant. Pedicels extremely short, at first erect, but recurved after flowering, springing from the axils of small trifid bracts, and having 3 or 4 bracteoles at the apex, which embrace the base of the calyx-tube. Flowers $\frac{3}{8}$ inch across, bright yellow. Petals oblong-obovate. Stamens shorter than the petals. Fruiting-calyx woody, about $\frac{1}{2}$ inch long and nearly as wide at the mouth, with the sides nearly straight and deeply furrowed, surmounted by an enlarged ring armed with spines, of which the exterior ones are shorter and spreading, the interior ones longer and erect. Achene pale. Plant deep-green, hairy.

Common Agrimony.

French, *Aigremoine Eupatoire*. German, *Gemeiner Odernennig*.

This plant was one of the favourite remedies of the old herbalists, and the multitude of diseases for which it is said to be a remedy would almost fill a medical dictionary. Gerarde tells us that a "decoction of the leaves is good for them that have naughty livers." Dioscorides adds, that "it is a remedy for them that have bad livers, and for such as are bitten with serpents." For the stoppage of hemorrhages a somewhat appalling prescription is given:—"Agrimony, pounded frogs, and human blood;" the latter ingredient savouring of homœopathic ingenuity. As a cooling "diet drink," as it is called, infused in water, Agrimony is still esteemed in rural districts, also as an application to ulcers. In North America it is said to be used in fevers with great success. Withering, on the authority of Dr. Hill, recommends "an infusion of six ounces of the crown of the root in a quart of boiling water sweetened with honey, and half a pint of it drank three times a day," as an effectual remedy for the jaundice. It was sometimes given as a vermifuge. The dried leaves are used in rural districts as a sort of tea. The plant

was at one time called "Philanthropos;" according to some old writers, on account of its beneficent and valuable properties; others say that the name arose from the circumstance of the seeds clinging to the garments of passers by, as if desirous of accompanying them. Gerarde inclines to this interpretation of the name. The whole plant yields a yellow dye; when gathered in September, it produces a nankeen-colour; later in the year the dye is of a darker hue.

SPECIES? II.—**AGRIMONIA ODORATA.** *Mill.*

PLATE CCCCXVIII.

A. Eupatoria, var. *odorata*, *Benth.* Handbook Brit. Fl. p. 198.

Stem erect, usually branched. Leaves pinnate, with the alternate pairs of pinnæ much smaller than the others; leaflets oblong-oval or elliptical, inciso-crenate-serrate, downy above and more densely so beneath, where they are pilose on the veins and sprinkled with small yellowish sessile glands. Stipules half-cordate-ovate, acuminate, incised. Fruit-calyx bellshaped-hemispherical, with 10 obsolete furrows not extending below the middle of the tube, surmounted by a ring bearing several rows of hooked spines, containing usually 2 achenes; segments connivent, acuminate.

In thickets and waste places. Rare. I have only seen it from the Isle of Wight, Hants; the neighbourhood of Tunbridge Wells, Kent; Staunton Harold, Leicestershire; Welchpool, Montgomeryshire; and county Kerry; but it occurs as far North as the Lake district, and is probably often passed over, from its similarity to the common species.

England, Ireland. Perennial. Summer and Autumn.

This plant has quite the aspect of large specimens of *A. Eupatoria*, of which it ought probably to be considered merely a subspecies. The stems are frequently 3 or 4 feet high, and the leaflets 2 or 3 inches long. The racemes are more dense, the flowers larger, the fruiting calyces considerably larger and much more widened out towards the mouth of the tube, with the furrows rudimentary or even quite undistinguishable. When there is only a single achene, it is nearly globular; but when there are 2, they are compressed. The glands on the underside of the leaves exhale a resinous odour.

Fragrant Agrimony.

French, *Aigremoine Odorante*. German, *Wohlriechender Odermennig*.

GENUS IV.—**SANGUISORBA.** *Linn.*

Flowers perfect, rarely polygamous. Calyx-tube turbinate, with an annular contraction at the throat, 4-winged and indurated

at maturity; segments coloured, deciduous, 4, in a single row. Petals none. Stamens 4, inserted in the throat of the calyx, much exserted. Ovary solitary, or rarely 2, with a terminal style. Stigma dilated, papillose or fimbriate. Achene solitary, enclosed in the calyx-tube.

Perennial herbs, very rarely annuals, with interruptedly-pinnate leaves and leaf-like stipules adnate to the petiole. Flowers purplish, olive, or white, in dense terminal spikes.

The generic name of these plants comes from the two words *sanguis*, blood, and *sorbere*, to absorb, from the supposed vulnerary properties of the species.

SPECIES I.—**SANGUISORBA OFFICINALIS.** *Linn.*

PLATE CCCCXXI.

Stem erect, slightly branched, leaves pinnate; leaflets stalked, ovate or oblong-oval, sub-cordate at the base, inciso-serrate. Flower-heads erect, dark purple, ovoid. Stamens as long as the calyx. Plant glabrous.

In damp meadows. Rare except in the midland and northern counties of England, not extending North of the counties of Berwick and Kirkcudbright.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock somewhat woody, rather thick, slightly branched, $1\frac{1}{2}$ to 4 feet high, producing tufts of radical leaves and solitary flowering-stems. Leaves with an odd terminal leaflet, 4 to 6 pair of pinnae, which increase a little in size towards the apex of the leaf, where they are from $\frac{1}{2}$ to 2 inches long. Lower stipules wholly adnate, scarious; those of the upper leaves with a semi-lunate denticulated free herbaceous portion: in luxuriant specimens the separate leaflets have frequently small rhomboidal denticulated stipels. Flower-heads varying from nearly globose to cylindrical-ovoid, $\frac{1}{2}$ to $1\frac{1}{2}$ inch long. Calyx-tube with 4 winged angles; segments spreading, ovate, dark-purple, petaloid. Achene pointed at both ends, brownish, smooth and slightly shining, closely invested by the hardened tube of the calyx. Leaves deep-green, paler and glaucous beneath.

Great Burnet.

French, *Sanguisorbe Officinale*. German, *Gemeiner Wiesenknopf*.

This plant is cultivated to a considerable extent in Germany for fodder, and has been grown here with that view; but it is not a favourite with English farmers. It was formerly in much repute as a vulnerary, and we read that "Burnet is a singular good herb for wounds; it stancheth bleeding, and therefore was named *sanguisorba*, as well

taken inwardly, as outwardly applied ;" also, " the leaves of Burnet steeped in wine and drunken comfort the heart and make it merrie, and are good against the trembling and shaking thereof." We are incredulous enough to believe that without the prescribed medication, wine will still, as of old, " gladden the heart of man," and sometimes cause him to forget that all good gifts may be abused.

GENUS V.—POTERIUM. *Linn.*

Flowers always polygamous or monœcious. Calyx-tube turbinate, with an annular contraction at the throat, indurated and tetragonal or 4-winged at maturity; segments deciduous, 4, in a single row. Stamens absent in the upper flowers of the spike, 20 to 30 in the lower ones, inserted in the throat of the calyx, much exserted. Ovaries 2, rarely 3. Styles terminal, exserted. Stigma penicilliform. Achenes 1 to 3, enclosed in the calyx-tube.

Herbs or under-shrubs, more rarely shrubs, with alternate interruptedly-pinnate leaves and adnate foliaceous stipules. Flowers purplish-brown or olive, in dense terminal spikes.

The name of this genus of plants is derived from the use to which one of the species is applied, *poterium* meaning a drinking-cup, into the contents of which, in ancient times, this plant often entered; or, according to some writers, the form of the flowers may have suggested the analogy, and the word *ποτηριον* (*poterion*), a cup, may be the origin of the name.

SPECIES I.—POTERIUM SANGUISORBA. *Linn.*

PLATE CCCCIX.

P. dictyocarpum, *Spach*, in *Ann. Sc. Nat. Ser. III. Vol. V. p. 34. Gr. & Godr. Fl. de Fr. Vol. I. p. 562.*

Stems herbaceous, erect or ascending, often curved at the base. Leaflets oval or oval-oblong, inciso-serrate. Flower-heads terminal, sub-globular or shortly ovoid, with the male or perfect flowers at the base, and the female towards the apex of the head. Fructiferous calyx with 4 longitudinal entire slightly-elevated thin wings, the intermediate spaces with a network of slightly prominent veins.

On dry pastures, borders of fields, and in open places in woods, especially on a chalky soil. Not uncommon in England, scarce and possibly not wild in Scotland, although it has been recorded as far North as the neighbourhood of Glasgow and the county of Forfar. In the latter country I have only seen it near Perth.

England, Scotland, Ireland. Perennial. Summer
and Autumn.

Rootstock thick, somewhat fleshy with a woody centre, producing numerous radical leaves and stems 6 inches to 2 feet high, sometimes quite erect, sometimes almost decumbent. Leaves with 4 to 12 pair of leaflets, which slightly increase in size towards the apex, where they are $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Stem-leaves with narrower divisions; their stipules with a semi-lunate deeply incised, herbaceous, free portion. Flower-heads $\frac{3}{8}$ to $\frac{3}{4}$ inch long. Calyx-segments oval, spreading, somewhat scarious, dull-purplish, margined with olive. Fructiferous calyx about $\frac{1}{2}$ inch long, ovate-ovoid, with 4 rather thin wings and numerous anastomosing veins, pale olive-brown. Achenes blackish, closely invested by the indurated calyx, indistinctly striate. Plant glabrous, except sometimes towards the base. Leaves deep-green, often tinged with reddish, paler and frequently glaucous beneath.

Common Salad Burnet.

French, *Pimprenelle Sanguisorbe*. German, *Wiesenknopf*.

The Salad Burnet forms much of the turf on some of the dry chalky downs in our southern counties. It was originally brought into notice by Rocque, a gardener at Waltham Green, near London, who found means to recommend it to the Dublin and other agricultural societies, and succeeded in getting it largely used. It does not appear that the attempt to introduce it into agriculture has permanently succeeded. Its produce is seldom very great, it lasts but a short time, and cattle do not appear to relish it very much, especially when fully grown. It was at one time largely used as a salad plant, and was an ordinary ingredient in "cool tankards." The leaves, when bruised, taste and smell like cucumber, and are very refreshing. The whole herb is slightly astringent, and possesses many of those qualities which are so valuable in vegetable food when eaten in an uncooked state. We may here remark on the desirability of giving encouragement to the consumption of fresh salad-herbs of all sorts, the greater the variety the better; and although those who live in London have little or no opportunity of extending their vegetable dietary beyond the routine supply introduced into Covent Garden market, those who are in the country may without expense provide a constant variety of health-giving salad plants for the table. It will appear reasonable to all who care to think on the subject, that green fresh plants contain in their tissues certain salts and other constituents intended by nature to enter into the human system, and adapted for it. By boiling or otherwise cooking these plants, all these valuable substances are lost, unless, indeed, the water in which they are dissolved be drunk with the vegetable, a proceeding which we cannot recommend as palatable. Gerard says: "The lesser Burnet is pleasant to be eaten in sallads, in which it is thought to make the heart merry and glad, as also being put into wine, to which it yeeldeth a certaine grace in the drinking."

SPECIES II.—*POTERIUM MURICATUM*. *Spach*.

PLATE CCCCXX.

P. Sanguisorba, var. *muricatum*, *Benth.* Handbook Brit. Bot. p. 198.

P. polygamum, *Waldst. und Kit.* Koch? Syn. Fl. Germ. et Helv. ed. ii. p. 258.

Stem herbaceous, erect. Leaflets oval or oblong, deeply inciso-

serrate. Flower-heads terminal, roundish or ovate-ovoid, with the male or perfect flowers at the base, and the female flowers towards the apex of the head. Fructiferous calyx with 4 longitudinal entire or toothed elevated rather thick wings, the intermediate spaces with a network of strongly-elevated and generally denticulated ridges.

Var. α , *platylophium*.

P. platylophium, Jord. Frag. VII. p. 22.

Fruit ovate-fusiform, $\frac{1}{2}$ inch long, with the wings very broad, with blunt denticulated edges; the faces muricated with very prominent sharply denticulated anastomosing ridges.

Var. β , *stenolophium*.

P. stenolophium, Jord. Frag. VII. p. 22.

Fruit broadly ovate-ovoid, about $\frac{1}{4}$ inch long, with the wings very prominent, with sharp, entire edges; the faces with elevated rather bluntly denticulated anastomosing ridges.

On the chalky borders of fields and in cultivated sainfoin and grass-fields, in which it is no doubt generally, if not always, introduced with seed from the Continent. Rather rare. The variety α I have from Combe Down, Bath, Somerset; Bembridge, Isle of Wight; Kenilworth, Warwickshire; variety β from Newmarket, Cambridge, and St. Margaret's, Kent. The species has also been found in the counties of Kent, Hants, Surrey, Essex, Suffolk, Cambridge, Berks, and Hereford; but, as the two varieties have not, so far as I know, been distinguished in this country, I am unable to give the separate localities for each, except when specimens have come under my own observation.

England. Perennial. Summer and Autumn.

Usually a considerably larger more branched and less rigid plant than *P. sanguisorba*, frequently 2 or 3 feet high, with the leaflets larger, those of the stem longer; the flower-heads larger and more elongate; the fruit considerably larger, with the wings much more conspicuous, and what are merely veins on the faces in *P. sanguisorba* are elevated into more or less denticulated ridges in the *P. muricatum*.

I judge of M. Jordan's names from the specimens in Billot's collection. There is so much difference between the fruits of the two forms, that very probably they ought to be separated as subspecies. Var. α somewhat resembles *P. Magnolii*, Spach; but that has the facial ridges produced into acute tubercles projecting

as far out as the wings, while in both the forms which I have here placed under *P. muricatum* they are less prominent than the wings. I strongly suspect that neither of the varieties can claim to be ranked as truly indigenous.

Muricated Salad Burnet.

GENUS VI.—**ALCHEMILLA.** *Tournef.*

Flowers perfect. Calyx-tube urceolate, with an annular disk in the throat, 8-ribbed and scarcely indurated at maturity; segments persistent, 8, in 2 rows (outer row an epicalyx of bracts), the outer 4 smaller than the inner. Petals none. Stamens 4, sometimes 2 or 1, inserted in the throat of the calyx; anthers 1-celled, opening by a transverse slit. Ovaries 1 to 4. Style from nearly the base of the ovary. Stigma capitate. Achenes 1 to 4, enclosed in the calyx-tube.

Small perennials, rarely annuals, with alternate roundish or reniform, mostly palmately-lobed or digitate leaves, with adnate foliaceous stipules, which are generally united so as to form a sheath or ochrea surrounding the stem. Flowers greenish, in small axillary or terminal corymbose cymes frequently disposed into lax panicles or corymbs.

The name of this genus of plants comes from the word *alkemelyeh*, the Arabic name for one of the species; another author says it is so named on account of its virtues being in repute with alchemists.

SECTION I.—**APHANES.** *Linn.*

Annuals, with the flowers sessile, in axillary glomerules. Calyx with the outer row of teeth very small or abortive. Fertile stamens generally only 1 or 2.

SPECIES I.—**ALCHEMILLA ARVENSIS.** *Scop.*

PLATE CCCCXXII.

Aphanes arvensis, *Linn. Sp. Plant.* p. 179.

Radical leaves none. Leaves wedgeshaped-semicircular or fan-shaped in outline, very deeply 3-cleft, with the segments again divided half-way down into linear-oblong blunt lobes. Stipules of all the leaves except the lowest with the free portion palmately cut. Flowers in small sessile clusters opposite the leaves.

In cultivated fields and waste places, and on hedge-banks. Very common, and generally distributed.

England, Scotland, Ireland. Annual. Spring to Autumn.

Stems numerous, nearly simple, slender, procumbent, spreading 2 to 8 inches long. Leaves shortly-stalked, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, with the lamina gradually narrowed into the petiole, which thus becomes winged. Stipules foliaceous, embracing the stem and adnate to the petiole, the free portion divided into segments like those of the leaves, those of the lower leaves frequently without the palmate portion. Flowers about the size of grains of sago, inclosed in the tube formed by the union of the stipules, sessile. Calyx-tube campanulate, the inner row of segments 4, rarely 5, in number, the outer ones rudimentary. Fruiting-calyx swollen, ovoid. Plant greyish-green, with long scattered hairs. Lower leaves soon decaying.

Parsley Piert, Field Lady's-Mantle.

French, *Alchémille des Champs, Perce-Pied.* German, *Feld Sinan.*

The common name of all the species of this genus is suggested by a fancied resemblance to such an article of clothing in the shape and vandyked edge of the leaf. It is also called in some parts of the country Breakstone. The leaves are somewhat astringent, and when dried and powdered have been given in agues. It is mentioned by Gerard under the name of Wild Tansie, and is highly recommended for its "many good vertues." In addition to its medical properties, he says: "The distilled water takes away freckles, spots, pimples in the face, and sunburning; but the herb laid to infuse or steep in white wine is far better; but the best of all is to steep it in strong white wine vinegar, the face being often bathed or washed therewith."

SECTION II.—EU-ALCHEMILLA. *Coss. & Germ.*

Perennials, with the flowers stalked, in terminal corymbose cymes, which are often arranged in panicles. Calyx with the outer row of teeth conspicuous. Fertile stamens generally 4.

SPECIES II.—ALCHEMILLA VULGARIS. *Linn.*

PLATE CCCCXXIII.

Rootstock thick, somewhat woody, producing numerous ascending or decumbent stems slightly branched above. Radical leaves on long stalks, reniform-orbicular, plicate, green beneath, 7- to 9-lobed; lobes extending about one-third way down, semicircular or ovate, serrated throughout their whole length; stem-leaves shortly-stalked, usually 5- or 7-lobed. Lower stipules tubular, with a very short denticulate free portion; upper stipules resembling a pair of connate leaves, narrowly lobed and cut. Flowers stalked, in small irregular cymes with shortly racemose branches; cymes combined so as to form a lax panicle.

Var. *α*, *genuina*.

Petioles and underside of leaves sub-glabrous.

Var. *β*, *montana*. Willd.

A. montana, Willd. Enum. 170.

A. vulgaris, *β subsericea*, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 256. Bab. Man. Brit. Bot. ed. v. p. 93.

Petioles and underside of leaves pilose.

In pastures and by the sides of streams. Common in the North of England and Scotland, but rare in the South of the former country, and apparently absent from all the South-eastern counties except Surrey and Essex. For var. *β* I am indebted to the Rev. W. W. Newbould, who has found it at Bent's Green, Sheffield.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Rootstock blackish, shortly creeping. Stems numerous, decumbent at the base and then ascending, 3 to 18 inches long. Petioles of the root-leaves 2 inches to 1 foot long; lamina plicate, $1\frac{1}{2}$ to 5 inches in diameter, with the lobes approximate, wholly serrated, with ovate-acute teeth; stem-leaves much smaller, rarely more than 1 to 2 inches across. Inflorescence at first compact, but very lax in fruit. Flowers $\frac{1}{8}$ inch across, greenish-yellow. Pedicels about as long as the calyx-tube, which in fruit becomes ovoid-campanulate; segments about as long as the tube, the 4 outer ones a little shorter and half as broad as the inner ones. Achene ovate-ovoid, pale-yellowish, very finely striated and roughened with reddish glandular points. Whole plant greyish-green, with the stems and veins of the leaves beneath hairy, or, in var. *β*, the whole of the underside of the latter.

Common Lady's-Mantle.

French, *Alchémille Vulgaire*. German, *Löwenfuss*.

This plant is astringent in its properties. It is given in Sweden medicinally in the form of a tincture in spasmodic complaints. In dry pastures it abounds, and is eaten by cattle readily; but it would scarcely answer as a fodder plant. It was called *Alkemelych* by the Arabian physicians; and Hoffman and others affirm that it has the power of restoring feminine beauty, however faded, to its earliest freshness.

Lightfoot tells us that the inhabitants of the Hebrides have subsisted for months together on this plant in times of scarcity, and that they frequently tear up the roots for food. They are simply boiled or roasted, and are said to taste like parsnips. The roots are eaten greedily by pigs.

SPECIES III.—**ALCHEMILLA CONJUNCTA.** *Bab.*

PLATE CCCCXXIV.

A. alpina, var. β , *Benth.* Handbook Brit. Fl. p. 196. *Hook. & Arn.* Brit. Fl. p. 132.

Rootstock rather slender, scarcely woody, producing several ascending or decumbent stems slightly branched above. Radical leaves on long stalks, orbicular, shining-silvery and silky-white beneath, 5- to 9-partite; lobes extending two-thirds or three-quarters way down, broadly oblong-elliptical, serrated for one-third or half-way down from the apex; the exterior ones contiguous. Lower stipules tubular-funnelshaped, acutely lobed at the apex; uppermost ones widely funnel-shaped, with a palmately-cleft free portion. Flowers stalked, in small irregular cymes arranged in interrupted spikes, which form the branches of a lax irregular panicle. Achene ovate-ovoid, gradually acuminate, smooth without glandular dots.

On Alpine rocks. Very rare, if really occurring wild in Britain; said to have been found at Borrowdale, Cumberland, by Mr. Bowman, but he himself stated that the plant was *A. alpina*; Glen Sannox, Arran (Dr. Tyacke), but I have not seen the specimens; Clova Mountains (Don), but the specimens are apparently cultivated ones; also in the latter station by Mr. A. O. Black, from whom I have examples. One of these, which is in flower, is certainly *A. alpina*; besides this there are a few tufts of root-leaves, which I believe to be *A. conjuncta*, though the leaves are less silvery beneath, the lobes rather narrower and serrated only towards the apex; in all which points they approach *A. alpina*. The true plant was found by Sir Walter Trevelyan, in the Feroe Islands; and, according to Mr. H. C. Watson, in Switzerland by Mr. T. Twining; so that there is no improbability of the plant occurring in this country.

Scotland (?). Perennial. Summer.

The following description is drawn up from cultivated specimens:—

Rootstock branched. Stems several, decumbent at the base, then ascending, 6 to 15 inches long, silky. Root-leaves on petioles 2 to 6 inches long; lamina 2 to 3 inches in diameter; lobes blunt and rounded at the apex, sharply serrated nearly half-way down, plicate when young, flat when mature, deep-green above, with an edging of silky hairs, brilliant silky beneath; the basal lobes scarcely more separated than the other, so that the leaf appears peltate; stem-leaves reniform. Stipules of the lower stem-leaves

sub-membranous, silky, with a few large triangular teeth at the apex; those of the uppermost leaves with the free portion entirely herbaceous, and longer than the tubular part. Flowers $\frac{1}{8}$ inch across, greenish-yellow, with the segments ovate, spreading in the form of a cross. Calyx and pedicels silky. Achene $\frac{1}{16}$ inch long, broadest a little above the base, then narrowing gradually to the point.

This plant grows freely in gardens about London, in the open ground and ripens its seeds; while *A. alpina* can scarcely exist except under the treatment necessary for Alpine plants.

Silvery Lady's-Mantle.

SPECIES IV.—**ALCHEMILLA ALPINA.** *Linn.*

PLATE CCCCXXV.

Rootstock rather slender, elongated, somewhat woody, producing several ascending or decumbent stems slightly branched above. Radical leaves on long stalks, reniform, silvery and silky-white beneath, divided into 5 to 7 lobes; lobes distinct to the base, oblong, serrated only close to the apex; the exterior ones separated by an angle greater than a right angle. Lower stipules tubular-funnel-shaped, acutely lobed at the apex; uppermost ones widely funnel-shaped, with a palmate-cleft free portion. Flowers stalked, in small irregular cymes arranged in interrupted spikes, which form the branches of a lax irregular panicle. Achene oblong-ovoid, suddenly acuminate, roughened with minute glandular points.

On Alpine rocks. Common, and often brought down from the mountains by rivers to the low grounds.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock branched. Stems several, decumbent at the base, then ascending, 2 to 8 inches long; pilose. Radical leaves on petioles, 1 to 4 inches long; lamina $\frac{3}{4}$ to $1\frac{3}{4}$ inch across, with the lobes blunt, but scarcely rounded at the apex; sharply serrated for a very short way down; plicate when young, flat when mature; deep-green above, with an edging of silky hairs, slightly shining, silky beneath. Stipules of the lower stem-leaves sub-membranous, pilose, with a few large acute teeth at the apex; those of the uppermost leaves with the free portion entirely herbaceous and longer than the tubular part. Flowers $\frac{1}{6}$ inch in diameter, greenish-yellow, with the segments ovate, spreading in the form of a cross. Calyx and pedicels pilose. Achene about $\frac{1}{12}$ inch long, nearly the same width for about two-thirds from the base, after which it is sud-

denly acuminate to the apex, sprinkled with very minute reddish points.

A. alpina is distinguished from *A. conjuncta* by having the rootstocks longer and more woody; the stems and petioles slender and more wiry; the lobes of the leaves separate to the base, considerably narrower and more attenuated towards the apex, less brilliantly silvery beneath, having fewer serratures, and these confined to the immediate vicinity of the apex; the exterior lobes even of the root-leaves not contiguous; the stems, pedicels, calyces, and stipules rather pilose than silky; the outer and inner calyx-segments more unequal in size; the achene larger, narrower in proportion at the base, and less perfectly smooth; but the characters taken from the calyx and achene, require to be examined in wild specimens before they can be relied on to distinguish these two plants.

Alpine Lady's-Mantle.

French, *Alchémille des Alpes*. German, *Gebergs Sinai*.

TRIBE III.—**DRYADEÆ.**

Herbs or shrubs, with digitate, pinnate, or more rarely simple leaves. Calyx-tube very short, saucer-shaped, not contracted at the throat; segments persistent. Petals generally present, yellow, white, rose-colour, or red. Stamens indefinite, rarely definite. Carpels indefinite, in many whorls on a conical or hemispherical receptacle, very rarely definite. Style lateral, more rarely terminal. Fruit consisting of a number of dry achenes, or of small fleshy drupes cohering together.

SUB-TRIBE I.—**FRAGARIÆ.**

Calyx flattish. Segments valvate in æstivation. Ovules attached near the base of the style. Styles lateral, short, deciduous or withering. Achenes dry, numerous (rarely only 5), inserted on a dry or succulent receptacle. Seed solitary.

GENUS VII.—POTENTILLA. *Linn.*

Calyx flattish or slightly concave, 10- or 8-partite; segments 10, more rarely 8, in two rows (the outer row an epicalyx of bracts), those in the outer row smaller than those in the inner. Petals 5, more rarely 4, sometimes absent. Stamens numerous, rarely 5 to 10. Carpels numerous, rarely 5 to 12. Receptacle convex, or

nearly flat, dry, rarely conical and spongy, not separating from the calyx. Achenes dry, with the styles deciduous.

Herbs, mostly perennial, rarely shrubs, with ternate, digitate, or pinnate leaves. Stipules of the lower leaves adnate to the petioles. Flowers yellow, white, or more rarely red or purple, solitary or in terminal cymes.

The name of this genus comes from the word *potens*, powerful, from the supposed medical qualities of some of the species.

SUB-GENUS I.—SIBBALDIA. *Linn.*

Petals strap-shaped and entire, or none. Stamens definite, 5 to 10. Receptacle concave, dry. Carpels 5 to 10.

SPECIES I.—POTENTILLA SIBBALDIA.

PLATE CCCCXXVI.

Sibbaldia procumbens, *Linn. Bab. Man. Brit. Bot. ed. v. p. 94. Benth. Handbook Brit. Fl. p. 195. Hook. & Arn. Brit. Fl. ed. viii. p. 132. Sm. Eng. Bot. No. 897. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 244. Fries, Sum. Veg. Scand. p. 45. Gr. & Godr. Fl. de Fr. Vol. I. p. 521.*

Rootstock branched, each division terminating in a barren leafy tuft. Flowering-stems lateral. Radical leaves ternate; leaflets obovate or oblong, truncate and 3-toothed at the apex, entire on the margins. Flowers few, in terminal compact corymbose cymes, frequently with 1 or more small cymes beneath, so as to form a very short panicle. Petals linear, sometimes absent. Stamens commonly 5 to 7.

On rocky debris and on the rounded summits of mountains; common in the Scotch Highlands, extending from Peeblesshire and Stirlingshire to Shetland.

Scotland. Perennial. Summer.

Rootstock woody, tortuous, branched, clothed with brown scales, the remains of the stipules of the leaves of preceding years. Leaves in a tuft terminating the rootstock, on petioles 1 to 3 inches long. Leaflets $\frac{1}{2}$ inch to 1 inch long, the central one shortly stalked; apex nearly as broad as the broadest part of the leaflet, truncate, with 3, rarely 4 or 5, large nearly equal teeth. Flowering-stems from the axils of the leaves of the preceding year (and consequently from below the tuft of barren leaves), leafless, or with one or more ternate leaves like those of the barren tuft, or with the leaflets

oblanceolate acute and not toothed. Stipules with the free portion ovate-lanceolate-acuminate. Flowers $\frac{1}{2}$ inch across, 3 to 9 in the terminal corymb. Calyx-tube hemispherical-cupshaped; segments lanceolate, acute, outer ones linear-strapshaped. Petals when present linear-oblanceolate, pale yellow. Receptacle hairy. Achenes ovoid, pale yellow, shining. Plant dull glaucous-green, more or less thickly clothed with long rather stiff hairs.

Mr. W. Wilson is surely right in referring this plant to the genus *Potentilla*. It was natural for Linnæus and the botanists who followed his system, to separate it, on account of the fewer stamens and pistils; but as the number of these is not constant, there can be no doubt it is merely a *Potentilla* with the number of these organs diminished.

Procumbent Sibbaldia.

French, *Sibbaldie couchée*.

SUB-GENUS II.—EU-POTENTILLA.

Petals obovate or orbicular, notched or rounded at the apex. Stamens more than 10, generally very numerous. Receptacle more or less convex, dry. Carpels very numerous.

SECTION I.—LATERALES. *Döll.*

Flowering-stems annual, lateral, produced below a barren shoot or tuft of leaves, which terminates each division of the rootstock.

SPECIES II.—**POTENTILLA FRAGARIASTRUM.** *Ehrh.*

PLATE CCCCXXVII.

P. sterilis, *Garcke*, Fl. v. N. & Mit. Deutschl. ed. vi. p. 132.

Fragaria sterilis, *Linn.* *Sm.* Eng. Bot. No. 1785.

Flowering-stems elongated, procumbent. Leaves ternate; leaflets rhomboidal-oval, crenate-serrate or serrate. Flowers few, solitary, opposite the leaves and terminal, on long peduncles. Outer calyx-segments shorter than the inner. Petals slightly longer than the calyx, obovate, notched. Receptacle with long hairs. Achenes faintly reticulated, downy at the base.

In open woods and on hedge-banks, and in gravelly waste places. Common in England, more scarce in Scotland, where it has not been recorded North of Ross-shire.

England, Scotland, Ireland. Perennial. Early Spring.

Rootstock woody, branched; branches terminating in a barren shoot having a few leaves on stalks 1 to 8 inches long. Leaflets 1 to 2 inches long, resembling those of a strawberry, but without the lateral veins being distinctly depressed above as in that plant. Flowering-stems produced below the barren tuft, from the axils of the leaves of the previous season, at first short, but afterwards lengthening until they are sometimes 6 inches to 1 foot long, furnished with shortly stalked ternate leaves or the upper ones with the lateral lamina suppressed and the remaining one oval. Stipules of the lower stem-leaves with the free portion roundish-ovate, blunt, those of the upper lanceolate-acute. Cyme so lax that the flowers appear solitary. Flowers $\frac{1}{2}$ inch across, white. Inner calyx-segments triangular, outer ones strap-shaped and shorter. Receptacle with the hairs longer than the other British species, except *P. fruticosa*. Plant greyish-green, more or less pilose; the young leaves silky beneath.

Barren Strawberry.

French, *Potentille Fraisiert*. German, *Erdbeerblättriger Günsel*.

SPECIES III.—**POTENTILLA VERNALIS**. Linn.

PLATE CCCCXXVIII.

Flowering-stems short, procumbent. Radical leaves digitate, with 5 (more rarely 7) wedgeshaped-obovate leaflets; leaflets truncate and 3-toothed at the apex, serrated on the margins towards the apex. Stipules of the radical leaves with the free portion linear-subulate, those of the stem-leaves with it ovate-lanceolate. Flowers few, on rather long erect peduncles, in lax terminal cymes. Outer segments of the calyx elliptical, shorter than the inner. Petals longer than the calyx, obovate, notched. Receptacle hairy. Achenes smooth, glabrous.

On dry banks and rocks. Rather rare. Sparingly distributed from Devonshire as far North as Forfarshire.

England, Scotland. Perennial. Early Summer.

Rootstock woody, much branched, the divisions terminating in a barren shoot. Flowering-stems 1 to 6 inches long. Radical leaves on stalks $\frac{1}{2}$ to 2 inches long, with the central segment the largest, $\frac{1}{4}$ to $\frac{3}{4}$ inch long, truncate at the apex, from the central tooth being smaller than the others; stem-leaves small, lower ones with 3 leaflets, upper with 1 3-cleft leaflet. Flowers usually 3 together, but sometimes solitary, $\frac{5}{8}$ inch across, bright yellow. Inner calyx-segments ovate, outer ones oblong-elliptical. Petals longer than broad. Receptacle with hairs shorter than the achenes. Achenes reniform. Plant dull greyish-green, the stems, peduncles,

calyces, and margins of the leaves pilose : the surface of the leaves and the calyx-segments with scattered hairs.

Spring Cinquefoil.

French, *Potentille du Printemps*.

SPECIES IV.—**POTENTILLA ALPESTRIS.** *Hall. fils.*

PLATE CCCCXXIX.

P. aurea, *Sm.* Eng. Bot. No. 561 (non *Linn.*).

P. verna, var. *Benth.* Handbook Brit. Bot. p. 194.

P. salisburgensis, *Henke*, in *Jacq. Collect.* Vol. II. p. 68. *Garcke*, Fl. v. N. & Mit. Deutschl. ed. vi. p. 132.

Flowering-stems elongated, ascending. Radical leaves digitate, with 5 wedge-shaped leaflets ; leaflets rounded at the apex, serrated on the margins towards the apex. Stipules of the radical leaves with the free portion lanceolate, those of the stem-leaves with it ovate-elliptical. Flowers rather few, on very long peduncles, in very lax terminal cymes. Outer segments of the calyx strap-shaped, shorter than the inner. Petals much longer than the calyx, broadly deltoid-obovate, notched. Receptacle hairy. Achenes smooth and glabrous.

On ledges of rock and grassy slopes on mountains. Rather rare. It is said to occur in Wales, and is certainly to be found in Yorkshire, and probably in Westmoreland, and it is not uncommon in the Breadalbane and Braemar mountains in Scotland.

England, Scotland. Perennial. Summer.

Very like *P. verna*, but of a brighter green colour, not at all opaque, as is usually the case in that species. The flowering-stems are erect or ascending from a decumbent base, 3 to 10 inches high ; the petioles of the root-leaves sometimes 4 or 5 inches long, and the leaflets themselves 1 inch long, more coarsely toothed ; the apex of the leaflet is much less truncate, from the central tooth being little smaller than those on each side of it. The lower stipules are broader and the upper ones rather narrower than those of *P. verna*, the flowers more numerous, on longer peduncles, larger, being 1 inch across, more showy from the petals being broader at the apex, and the calyx-segments are more unequal in size.

Yellow Alpine Cinquefoil.

French, *Potentille Alpestre*. German, *Salzburgischer Günserrich*.

SPECIES V.—**POTENTILLA TORMENTILLA.** *Schenk.*

PLATES CCCCXXX. CCCCXXXI.

Rootstock thickened. Flowering-stems elongated, ascending, decumbent or procumbent, sometimes rooting at the nodes, branched towards the top. Radical leaves generally decayed at the time of flowering, ternate or digitate-quinate; leaflets wedge-shaped or oblanceolate, pointed or somewhat obtuse at the apex, coarsely and acutely serrated in the apical half; stem-leaves mostly ternate, the uppermost ones sub-sessile. Stipules obovate, cleft, or the upper ones elliptical and nearly entire. Flowers on long peduncles in the forks of the stem or opposite the upper leaves, arranged in a very lax cyme, mostly tetramerous. The 4 outer calyx-segments nearly as long as the inner ones but narrower. Petals much longer than the calyx, deltoid-obovate, notched. Receptacle hairy. Achenes glabrous, reticulated or finely tuberculate.

SUB-SPECIES I.—**Potentilla sylvestris.** *Neck.*

PLATE CCCCXXX.*

Garcke, Fl. v. N. & Mit. Deutschl. ed. vi. p. 131.

P. Tormentilla, *Sibth.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 239. *Fries*, Sum. Veg. Scand. p. 45. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 530.

P. Tormentilla, var. *a*, *Bab.* Man. Brit. Bot. ed. v. p. 95. *Benth.* Handbook Brit. Fl. p. 131. *Hook. & Arn.* Brit. Fl. ed. viii. p. 193.

Tormentilla officinalis, *Sm.* Eng. Bot. No. 863.

T. erecta, *Linn.* Sp. Pl. p. 716.

Stems erect or ascending, not rooting at the nodes. Stem-leaves ternate, all sessile. Flowers in a terminal corymbose cyme. Achenes reticulated when dry.

On heaths and in open woods and gravelly pastures. Very common throughout the kingdom.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock much thickened, terminating in a barren shoot, which, however, is merely in the state of a bud when the flowers appear. Stems numerous, lateral, decumbent at the base, frequently ascending or sub-erect at the apex, flexuous, repeatedly forked, especially towards the top. Radical leaves stalked, with 3 broadly wedge-shaped divisions, of which the lateral ones are again cleft, and sometimes so deeply that the leaf becomes quinate; leaf-

* Named "*P. eu-Tormentilla*" on the plate.

lets $\frac{1}{2}$ to 1 inch long, with a few large equal teeth; stem-leaves sessile or very shortly stalked, with the leaflets narrower than those of the radical leaves. Stipules palmately cut at the apex, those of the upper leaves with a single incision or entire. Flowers $\frac{1}{2}$ to $\frac{5}{8}$ inch across, bright yellow. Inner calyx-segments lanceolate-triangular, outer ones strapshaped-elliptical. Achenes kidney-shaped, keeled and reticulated when dry, but these markings are not discernible in a fresh state. Plant bright green, slightly shining, sparingly clothed with adpressed hairs on the leaves, and short curled hairs on the stem; peduncles and calyces more hairy.

I have never seen this form with more than 4 petals.

Common Tormentil.

French, *Tormentille*. German, *Tormentillwurzel*.

The root of the Tormentil is a very old article of the *Materia Medica*, but it is difficult to assent to the doctrine of Sprengel, that it was the root of the *πενταφελλον* of the Greeks, the description of which by Dioscorides does not correspond with the modern *Potentilla Tormentilla*. It is a very common plant on dry hilly pastures in this and other European countries. It has a tuberous root, about the thickness and length of the upper joint of the fore finger, tough, woody, and provided with numerous radicles. It is deep brownish-red externally, and flesh-red within. Its taste is strongly astringent, and it contains more tannin than the best oak bark; indeed, it is said that seven pounds of the latter are equal only to one pound of Tormentil roots—they are superior to everything but galls and catechu in this respect. The roots are still used in some countries for tanning, and, according to Lightfoot, it was largely used in the Hebrides, in his time, for this purpose. According to the latest analysis, Tormentil roots contain 17 per cent. of tannic acid, a colouring and gummy matter, and a trace of volatile oil; it is not, however, included in the present British Pharmacopœia. It is, nevertheless, in constant use in veterinary practice. It is said that sheep are never attacked with the rot where the Tormentil grows, and it may possibly have a beneficial effect on them. It has been recommended to plant the Tormentil in damp pastures where the disease is prevalent among flocks. The gummy matter becomes developed by long boiling, and in consequence the roots have sometimes been eaten in times of scarcity.

In the islands of Tiree and Col the people tore up the pastures so in seeking for the roots, that the landowners were compelled to forbid the search for them. In Lapland they are used for dyeing skins of a red colour. Mr. Young informs us that pigs are fed on them at Killarney.

SUB-SPECIES II.—*Potentilla procumbens*. *Silbh.*

PLATE CCCCXXXI.

Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 239. *Fries*, Sum. Veg. Scand. p. 45. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 531.

P. Tormentilla, var. β , *Bab.* Man. Brit. Bot. ed. v. p. 95. *Benth.* Handbook Brit. Fl. p. 193. *Hook. & Arn.* Brit. Fl. ed. viii. p. 131.

Tormentilla reptans, *Linn.* Sp. Pl. p. 716. *Sm.* Eng. Bot. No. 864.

Stems procumbent, generally rooting at the nodes in the latter part of the season. Stem-leaves ternate or quinate, most of them

stalked. Cyme so lax that the flowers often appear solitary and opposite the leaves. Achenes finely tuberculate when dry.

In hedge-banks, borders of fields, and woods. Not uncommon, but much less frequent than *P. eu-Tormentilla*.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Generally a much larger plant than the last, with a more slender rootstock, and stems often 1 to 2 feet long. Leaflets sometimes 1 or $1\frac{1}{2}$ inch long, broader than those of *P. sylvestris*, and with a greater number of serratures. Stipules more often elliptical and entire. Flowers considerably larger, $\frac{3}{4}$ inch across, in a less evident cyme, from the peduncles being further apart, sometimes pentamerous.

P. mixta, *Nolte* (Koch, *l. c.* p. 239) is a puzzling plant, which is sometimes confounded with the above. Professor Babington considers it as a hybrid between *P. Tormentilla* and *P. reptans*, both of which it resembles; approaching the former in its rather small tetramerous flowers, while it comes near the latter in the leaves being stalked, with 5 oblanceolate rather finely serrated leaflets. The stipules are entire, as in *P. reptans*, but much narrower elliptical instead of ovate, resembling those of the upper leaves of *P. sylvestris*, and those of most of the stem-leaves of *P. nemoralis*, but it is more hairy than either of these forms.

Creeping Tormentil.

French, *Potentille couchée*. German, *Gestreckter Günsersch.*

SPECIES VI.—**POTENTILLA REPTANS.** *Lin.*

PLATE CCCCXXXII.

Rootstock slender. Lateral stems or runners elongated, procumbent, rooting at the nodes, simple. Leaves all similar, stalked, digitate, with 5 oblanceolate leaflets; leaflets rounded at the apex, rather finely serrated or crenate. Stipules ovate, or ovate-elliptical, entire. Flowers on long peduncles opposite the leaves, pentamerous. The 5 outer calyx-segments resembling in shape and size the 5 inner. Petals much longer than the calyx, roundish-ovate, notched. Receptacle hairy. Achenes glabrous, rough with small points.

In meadows, pastures, and by road-sides. Common in England and the South of Scotland, but scarce beyond the Forth and Clyde, though found as far North as Aberdeenshire and Argyleshire.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Flowering-stems at length many feet long, rooting at the joints, and forming separate plants by the decay of the intermediate portions. Leaves on stalks 2 to 4 inches long, in small tufts at each node, as well as from the crown of the rootstock; leaflets 1 to 3 inches long, varying from oblanceolate to obovate, serrated often nearly to the base. Peduncles usually longer than the leaves. Flowers $\frac{3}{4}$ to 1 inch across, bright yellow.

This plant closely resembles some of the forms of *P. procumbens*, and still more strikingly large examples of *P. mixta*, but the stems are more constantly rooting, not at all branched, the leaves with longer stalks, leaflets with a more rounded outline, with finer and less acute serratures, the flowers larger, the calyx-segments more nearly equal, the stipules broader than the entire ones of the above-mentioned forms, and the achenes more distinctly tuberculated.

Creeping Cinquefoil.

French, *Quintefeuille*. German, *Kriechender Günserrich*.

This plant is as abundant as the Tormentil, and possesses the same qualities. It has been applied to similar purposes. It appears to have been the officinal plant of the ancients, and is the *πενταφυλλον* of Theophrastus (ix. 19), and of Dioscorides (iv. 42). Pliny mentions it as *Quinquefolium* (25, 9, 27, 10). On account of its astringency, it was frequently administered in agues. Turner says, "Dioscorides sayeth, but methynk that it smelleth of superstition, that in a quartayn the lives of four stalks ought to be taken, in a tertian the lives of three, and in a quotidian the lives of one stalk." We suppose our author must mean the *leaves*, which are undoubtedly astringent.

SPECIES VII.—*POTENTILLA ANSERINA*. Linn.

PLATE CCCCXXXIII.

Rootstock slender. Lateral stems or runners elongated, procumbent, rooting at the nodes, simple. Leaves all similar, pinnate, with 6 to 10 pair of lateral leaflets; leaflets oblong-elliptical or oblong-lanceolate, deeply inciso-serrate or pinnatifid, silky and silvery-white on both sides or only beneath. Stipules membranous, with the free portion small, ovate, in those of the runners herbaceous, incised. Flowers solitary, on long peduncles from the nodes of the stem, pentamerous. The 5 outer calyx-segments narrower than the inner, but nearly as long. Petals much longer than the calyx, roundish-obovate, slightly notched. Receptacle hairy. Carpels oval, glabrous, and smooth.

In damp meadows, pastures, and ditch-banks, also by roadsides, and waste places overflowed in winter. Very common, and generally distributed.

England, Scotland, Ireland. Perennial. Spring and Summer.

Rootstock terminating in a tuft of leaves, from the axils of which stems are given off which lie on the ground and soon take root at each joint, where smaller tufts of leaves are produced. Leaflets increasing in size towards the apex of the leaf, so that the outline of the whole leaf is oblanceolate; terminal leaflet $\frac{1}{2}$ to $2\frac{1}{2}$ inches long, the teeth very deep and sharp, commonly green on the upper side, but sometimes white and silvery there as well as on the underside. Flowers really terminal, the runner being evidently continued from an axillary bud on the stem. Peduncles 2 to 6 inches long. Outer sepals elliptical, often cut, inner ones roundish ovate-acuminate. Carpels large in comparison with those of the other species of this genus, but often abortive. Whole plant more or less silky hairy.

Silver-weed.

French, *Ansérine*, *Argentine*. German, *Gemeiner Gänserich*.

The common name of this plant is caused by the silvery hairs with which the under-side of the leaves are clothed, giving the whole plant a bright shining appearance. In some of the Hebrides the inhabitants have often been supported by the roots for months together; they frequently tear them up by the plough for use. They are simply prepared by roasting or boiling, and are said to taste like parsnips. In some places they answer in a measure the purposes of bread, and it is said that when once partaken of they become a favourite article of food. The leaves are somewhat astringent, and when dried and powdered have been given in agues. Withering recommends a spoonful to be taken every three hours between the fits.

SECTION II.—TERMINALES. *Döll.*

Flowering-stems annual, terminating the divisions of the rootstock.

SPECIES VIII.—**POTENTILLA RUPESTRIS.** *Linn.*

PLATE CCCCXXXIV.

Stems erect, slightly branched in the upper part. Radical leaves on long stalks, pinnate, with 2 to 3 pairs of lateral leaflets and a larger terminal one; leaflets oval-obovate or roundish, irregularly crenate-serrate or incised, with the divisions crenate-serrate; stem-leaves ternate, shortly stalked or sub-sessile. Stipules with the free portion very large, ovate or lanceolate, often incised. Flowers in a lax irregular terminal cyme. Outer calyx-segments about half the length of the inner and much narrower. Petals white, orbicular, entire. Receptacle hairy. Carpels glabrous, smooth.

On limestone rocks, very rare. On Craig Breidden, Montgomeryshire.

England. Perennial. Early Summer.

Rootstock woody, branched, some of the divisions terminating in tufts of leaves, others in flowering-stems 1 to 2 feet high from the centre of one of these tufts. Radical leaves commonly with 2 pair of leaflets besides the terminal one, which is approximate to the upper pair, both pairs unequal at the base, with the outermost side the largest; terminal leaflet $\frac{3}{4}$ to $2\frac{1}{2}$ inches long. Stipules of the radical leaves with the free portion entire, very small, those of the stem-leaves with a large cut herbaceous portion. Flowers rather few, white, $\frac{3}{4}$ to 1 inch across. Plant sparingly hairy below, more so above, densely so on the pedicels and calyces.

This species is very unlike any of the other European forms of *Potentilla*.

Strawberry-flowered Cinquefoil.

French, *Potentille des Rochers*. German, *Felsen Günserich*.

SPECIES IX.—**POTENTILLA ARGENTEA.** *Linn.*

PLATE CCCCXXXV.

Stem ascending, tomentose. Radical leaves (as well as the lower and middle stem-leaves) stalked, digitate, with 5 narrowly wedge-shaped leaflets; leaflets entire at the base, coarsely serrated or pinatifid in the apical half, with the extreme margins reflexed, hoary-white beneath; uppermost stem-leaves sessile, ternate, with linear-elliptical leaflets. Stipules with the free portion long, narrowly triangular, entire. Flowers in dichotomous cymes. Outer calyx-segments nearly as long as the inner, but narrower. Petals yellow, not much longer than the calyx, obovate, nearly entire. Receptacle hairy. Carpels glabrous, smooth.

On dry gravelly pastures and by roadsides. Rather rare. Pretty generally distributed in England, but in Scotland confined to the East coast, in which it is found in scattered localities as far North as Moray. Not included in Professor Dickie's *Flora of Ulster*, but marked in Dr. Moore's list of Irish plants.

England, Scotland, Ireland. Perennial. Summer and Autumn.

Rootstock woody, producing few or numerous stiff stems, 6 to 18 inches long, simple below, corymbosely branched at the apex. Leaflets $\frac{1}{2}$ to $1\frac{1}{4}$ inch long, very narrow, but widening out towards the apex, with the sides nearly straight to the point where the lobing commences. Flowers $\frac{1}{2}$ inch across, numerous, in a compact or lax slightly irregular dichotomous cyme, with opposite ternate leaves or bracts at the forks. Calyx-segments oblong-

lanceolate. Stem purplish, clothed with a hoary tomentum, under-side of the leaves, pedicels, and calyces hoary-white.

Hoary Cinquefoil.

French, *Potentille argentée*. German, *Silberweiser Gänserich*.

SECTION III.—FRUTICOSÆ. *Döll.*

Stems woody, perennial.

SPECIES X.—**POTENTILLA FRUTICOSA.** *Linn.*

PLATE CCCCXXXVI.

Stems woody, branched. Leaves stalked, pinnate, with 2, rarely 3 pairs of lateral leaflets; leaflets elliptical, entire, mucronate, with the margins revolute, all approximate, the uppermost pair confluent with the terminal one. Stipules with the free portion long, elliptical, entire. Flowers terminal, in a corymbo-paniculate cyme, or sub-solitary. Outer calyx-segments as long as the inner, but narrower. Petals obovate, rounded at the apex. Receptacle with long hairs. Carpels hirsute.

In stony and bushy places in mountainous districts. Very local. Abundant in Upper Teesdale, on both the Yorkshire and Durham sides of the river Tees; at Wastdale Screes, Cumberland; and by the Don, west of Doncaster; in counties Galway and Clare, Ireland; also reported from the falls of the Clyde, in Scotland, but no doubt planted in that locality.

England, [Scotland,] Ireland. Shrub. Summer and Autumn.

A shrub 1 to 4 feet high, much branched, with the bark separating in long flaky strips from the older branches. Leaves numerous, rather shortly stalked. Leaflets nearly equal in size (often so closely placed that the leaf appears to be digitate), $\frac{1}{2}$ to 1 inch long. Flowers large, yellow, 1 to $1\frac{1}{4}$ inch across. Sepals long, the inner ones broadly lanceolate-triangular, the exterior ones linear-elliptical, more rarely with sub-foliaceous tips. Carpels, as well as the receptacle, completely covered with very close long bristly hairs. Whole plant dull-green, with rather long hairs, which are remote, except on the pedicels and base of the calyx, where they are placed close together.

Shrubby Cinquefoil.

French, *Potentille Ligneuse*. German, *Kleinblütlicher Gänserich*.

The leaves of this species, as well as those of *P. rupestris*, are used in Siberia for making tea.

SUB-GENUS III.—COMARUM. *Linn.*

Petals oblanceolate, acuminate. Stamens very numerous. Fruit-receptacle conical, spongy. Carpels very numerous.

SPECIES XI.—POTENTILLA COMARUM, *Nestl.*

PLATE CCCCXXXVII.

Benth. Handbook Brit. Bot. p. 195.

Comarum palustre, *Linn.* *Tab. Man.* Brit. Bot. ed. v. p. 96. *Hook. & Arn.* Brit. Fl. ed. viii. p. 128.

Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 235. *Fries*, Sum. Veg. Scand. p. 44. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 535. *Sm.* Eng. Bot. No. 172.

Potentilla palustris, *Scop.* *D. C.* Prod. Vol. II. p. 583.

Rootstock extensively creeping. Lower leaves stalked, pinnate with 2 to 3 pairs of lateral leaflets; leaflets approximate, elliptical or oblong-elliptical, obtuse or acute, coarsely and evenly serrate, glaucous beneath; upper leaves sessile, often ternate. Stipules with the free portion large, ovate-cuspidate, frequently incised. Outer calyx-segments strap-shaped, inner ones broadly ovate, abruptly acuminate. Petals oblanceolate, acuminate. Receptacle finely downy, at length elongate-conical, spongy. Carpels glabrous.

In marshes and spongy peat-bogs. Common in mountainous districts, but generally distributed throughout Britain, though rare in the South of England.

England, Scotland, Ireland. Perennial. Summer.

Rootstock blackish, creeping amongst the mud, branched, the divisions terminating in elongated flowering-stems or in barren shoots. Stems decumbent at the base, then erect or ascending, 1 to 2 feet high. Leaflets 1 to 3 inches long, generally all approximate, so that the leaf appears to be digitate, with large acute serratures rounded on their outer margin. Flowers dark-purple, 1 to 1½ inch across, in a terminal cyme. Inner calyx-segments very large, much longer than the petals, dull-purple within. Petals narrow, dark-purple. Stamens and styles purple. Disk woolly, as well as the spongy receptacle, which becomes longer than broad. Carpels minute, very numerous, brownish, smooth, with the styles persistent. Whole plant sparingly hairy. Leaves glaucous underneath.

Marsh Cinquefoil.

French, *Comaret des Marais*. German, *Sumpf Blutauge*.

The whole of this herb is powerfully astringent. The roots have been used in tanning, but other materials have superseded them. They yield a reddish or dull-yellow dye, and the Irish are said to stain their milkpails with it, in order to give a richer appearance to the milk.

GENUS VIII.—FRAGARIA. *Linn.*

Calyx flattish, or slightly concave, 10-partite. Segments 10, in 2 rows, those of the outer row (or epicalyx of bracts) smaller than those of the inner. Petals 5. Stamens numerous. Carpels numerous. Receptacle convex or conical, fleshy or pulpy, at length separable from the calyx. Achenes dry.

Herbs with ternate leaves and runners. Stipules adnate to the peduncle. Flowers white, frequently imperfectly diœcious in terminal cymes. Receptacle reddish or white, edible.

The name of this genus of plants comes from the word *fragrans*, fragrant, in allusion to the pleasant perfume of the fruit. Lord Bacon gives the leaves credit for possessing this quality also, and gives the whole genus a high place in his catalogue of "those flowers and plants that do best perfume the air."

SPECIES I.—FRAGARIA VESCA. *Linn.*

PLATE CCCCXXXVIII.

Leaves ternate; lateral leaflets generally sessile. Scapes hairy, with the hairs spreading. Pedicels with the hairs ascending or adpressed. Flowers perfect. Calyx spreading or reflexed after flowering. Fruit-receptacle globular or ovoid-conical, broad at the base, bearing carpels throughout.

In woods and shady hedge-banks. Common, and generally distributed, extending as far North as Orkney.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock terminating in a barren tuft, sending out long slender reddish runners, which take root at the nodes, where small leafy tufts are produced. Leaves radical, stalked. Leaflets oval-rhomboidal, 1 to 3 inches long, unequal at the base, with the lower side most developed; all somewhat plicate, coarsely and deeply serrate, the serratures with curved sides. Stipules scarious, with a lanceolate free portion. Scapes lateral, generally leafless, 3 inches to 1 foot high, terminating in a corymbose cyme of white flowers. Lowest bract sometimes resembling the leaves, but most frequently reduced to a single leaflet, with a pair of stipules; upper bracts tripartite from the leaflet, being as small as the stipules. Flowers erect, white, $\frac{1}{2}$ to $\frac{3}{4}$ inch across. Outer calyx-segments nearly as long as

the inner, but narrower. Petals obovate-roundish, entire, white, with the claw indistinct. Fruiting-receptacle $\frac{1}{2}$ to $\frac{3}{4}$ inch long, fleshy, red or white, closely studded with small yellowish-brown glabrous carpels. Plant deep-green, clothed with rather long soft hairs.

Wild Strawberry.

French, *Fraisier Commun.* German, *Gemeine Erdbeere.*

To inquire into the origin of the name of this familiar and delicious fruit seems almost unnecessary; but it is curious to analyze the meaning of even our household words, and to revert to their original use. In old English, we read of the "Streow-berie;" and Dr. Pryor tells us that this name was suggested either by its straw-like halms—the little seeds situated on the delicious red juicy receptacle we like so much—or from the fruit lying strewn on the ground, or from the custom of laying straw between the rows to prevent the fruit being soiled. Some have supposed that the name is derived from the custom in some parts of England to sell the wild ones threaded on grass straws. But the name dates from a much earlier time than any at which Wild Strawberries are likely to have been marketable. We learn from several old writers that Strawberries were cultivated in England from a very early period. They were much grown in London, a fact mentioned by Hollingshead; and Shakespeare alludes to them as growing in the garden of the Bishop of Ely in Holborn. Gloucester says, in the play of "Richard the Third,"—

"My Lord of Ely, when I was last in Holborn,
I saw good strawberries in your garden there;
I do beseech you send for some of them.

Ely. Marry, and will, my lord, with all my heart.

Where is my lord Protector? I have sent for these strawberries.

Hast. His grace looks cheerfully and smooth this morning."

Strange as it may now seem to us who connect the names of Holborn and Ely Place with all that is dusty and noisy, dingy and unattractive, given up to busy trade or duller law, not longer ago than the time of Shakespeare "good strawberries" grew there, and rural scenes and pastimes flourished; and so, as time goes on, and men increase and spread in this great metropolis of ours, will it be with many a wild district or blooming garden when we have passed away. The Wild Wood Strawberry is the parent of all our cultivated varieties of Alpine Strawberries, as distinguished from the Hautboys, or latter sort of Strawberry, which seems originally to have come from the high woods of Bohemia. In their native uncultivated state, the Wild Strawberries are without much flavour, very small, but extremely charming objects: amidst their dark rich green leaves, the pretty bright berries cannot fail to attract the admiration of even those whose palates are too highly cultivated to appreciate such rustic delicacies. With cream and sugar, however, we can affirm that they are not despicable, only their minute size reduces the feast to very moderate dimensions. The Strawberry is perhaps the most wholesome of fruit, and may be eaten by most people when quite ripe with impunity. They are said to promote perspiration, and are undoubtedly very cooling. Hoffman thought them beneficial to consumptive people; and Gerarde tells us that "the berries quench thirst, and do allay the inflammation or heate of the stomach."

SPECIES II.—*FRAGARIA ELATIOR*. Ehrh.

PLATE CCCCXXXIX.

F. moschata, "*Duchesne*." Lindley, Syn. Brit. Fl. p. 96.*F. magna*, Thuill. Gr. & Godr. Fl. de Fr. Vol. I. p. 536. Garcke Fl. V. N. & M. Deutschl. ed. vi. p. 128.

Leaves ternate; lateral leaflets often stalked. Scapes densely hairy, with the hairs reflexed-spreading. Pedicels with the hairs spreading, reflexed. Flowers polygamo-dicœcious. Calyx spreading or reflexed after flowering. "Fruit-receptacle ovoid, contracted and deprived of carpels at the base."—(Gr. & Godr. *l. c.*)

In woods and hedgerows, but only where it has escaped from cultivation.

[England, Scotland, Ireland.] Perennial. Early Summer.

Very like *F. vesca*, but a stouter and more hairy plant, often destitute of runners. The leaflets more truly oval, and the lateral ones ovate, less deeply and less sharply serrated, with the teeth more rounded on the margins. Corymb more compact, and with more numerous and larger flowers, which are imperfectly polygamous through abortion, the stamens being imperfect in some plants. The petals are larger, broader, more contracted at the claw, which is yellow. But the best mark of distinction between the two plants is the dense clothing of spreading hairs on the pedicels, and the more hairy calyces. The fruit of the subsontaneous plant I have never seen.

Hautbois Strawberry.

French, *Fraisier élevé*. German, *Hohe Erdbeere*.

The mysteries of horticulture, and the varieties of fruits of all sorts which are produced by the skill of the gardener, increase so rapidly that our native fruits, in which they originate, can scarcely be recognized as related to the beauties which adorn our tables. We see and admire the superb Myatt's seedlings and British Queens, and can hardly trace in their luscious richness the likeness of their humble parents.

Strawberry plants multiply spontaneously every year, as well by suckers from the parent stem as by numerous runners, all of which, rooting and forming a plant at every joint, require only to be removed to a bed where there is room for them to flourish. Each of these will bear a few fruit the following season; but it is in the second year that we may expect a crop. Neill says, with regard to the situation of a Strawberry-bed, "Strawberries are generally placed in a quarter of the garden by themselves, and it should be one which is freely exposed to sun and air. They are sometimes, however, planted in single rows as edgings to borders, and in this way they often produce large crops. In either case, care must be had to replace them every fourth or fifth year at the farthest." Mr. Keen, of Isleworth, who is one of the most successful growers of this fruit, tells us that a bed of Strawberries should be formed from runners which have been planted out for this purpose the preceding year: it is a bad plan to form a new

bed with old plants. After the beds are planted, they should be kept as free from weeds as possible, and the runners cut about three times a season. In the autumn, he says that he has the space between the rows dug up, and, where practicable, some fresh manure laid in. He tells us, also, that different kinds of Strawberries require different sorts of soil. The Pine Strawberry, which is the most difficult one from which to secure a good crop, requires a light loamy soil, while the Hautbois, or "Hautboy," as it is commonly called, thrives best in a light soil well manured. The Wood Strawberry is best raised from seed; the Alpine variety also must always be raised from seed, which should be sown in a bed of rich earth early in the spring. This sort of Strawberry exceeds all others in quickness of bearing, for it yields a good crop at the end of one year.

Mr. Atkinson describes a method of making Strawberry-beds which he saw at Chatham, and which he thought excellent. The beds were upon flat ground, each about three feet wide, and between them were trenches nine inches wide, and four-inch walls of brick on each side of the trenches to keep the earth up: these trenches were about the depth of two or three layers of bricks, and were for the purpose of holding water, which was supplied from a pump whenever the ground was dry while the plants were in fruit. By this means a much larger crop of fruit was obtained, and the plants continued bearing much longer than in beds where there were no trenches for water.

According to this plan, a very large extent of Strawberry-ground is watered with very little labour, and it has the advantage of letting the water to the roots of the plants, so as to keep the ground moist without hardening the surface, as is the case when the tops of beds are watered with watering-pots.

In all treatises on horticulture, we have extensive directions as to the methods of forcing Strawberries in hothouses and pits: some kinds will afford a crop of fruit in a hothouse early in the spring, and if carefully removed and placed in the open ground, will yield another crop in September.

SUB-TRIBE II.—DALIBARDEÆ.

Calyx slightly concave or flattish; segments usually valvate in aestivation. Ovules 2, attached near the style. Styles nearly terminal, deciduous or withering. Fruit of numerous small drupes cohering together, inserted on a dry receptacle. Seed solitary.

GENUS IX.—RUBUS. *Linn.*

Calyx concave or flattish, 5-partite; segments all in one row, without an epicalyx of bracts. Petals 5. Stamens numerous. Carpels numerous, with 2 collateral suspended ovules (one of which is abortive) in each. Styles nearly terminal, deciduous. Receptacle conical or cylindrical, spongy. Achenes pulpy and drupaceous, persistent or sometimes deciduous.

Shrubs or undershrubs, with procumbent arched or erect stems, which are usually prickly and biennial. Leaves digitate or pinnate,

with 5 or 3 leaflets, or simple and more or less deeply palmately lobed. Flowers white, pink, red, or purple, in corymbose cymes, which are often combined so as to form a panicle. Fruit pulpy, edible.

The name of this genus speaks for itself even to English ears : *ruber*, red, indicating the colour of the fruit.

SPECIES I.—**RUBUS CHAMÆMORUS.** *Linn.*

PLATE CCCCXL.

Rootstock extensively creeping. Stems herbaceous, simple, leafless at the base, the upper part with 1 to 4 leaves. Leaves simple, roundish, 5- to 7-lobed, deeply cordate at the base, with the basal lobes contiguous. Flowers solitary, terminal, diœcious. Petals oblong-oval, spreading. Fruit not separating from the receptacle, consisting of rather few large very juicy drupes with a very tender skin, pale orange when ripe.

On peaty moors in mountainous districts. In North Wales, Derbyshire, Teesdale, the Lake district, and all the mountainous tracts in Scotland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock somewhat woody, creeping at some depth below the surface, much branched. Stems 3 to 8 inches high, erect. Stipules oval, those of the lowest nodes without leaves. Leaves stalked, $1\frac{1}{2}$ to 3 inches across, plicate, rugose, lobed from a quarter to half-way down, the lobes themselves again very slightly lobed, and serrate or crenate-serrate. Sepals oval, acuminate, unequal in breadth, generally tinged with red. Flowers $\frac{3}{4}$ to $1\frac{1}{4}$ inch across, pure white. Fruit $\frac{3}{4}$ to 1 inch long, with the fruiting-calyx adpressed to its base; drupes rather numerous, containing faintly reticulated stones. Plant dull-green, with the leaves paler below. Stems generally tinged with red, and, as well as the petioles, peduncles, and calyces, thickly clothed with small curled hairs; leaves sub-glabrous above, sparingly hairy beneath.

Cloudberry, Roebuck-berry.

French, *Ronce.* German, *Zwergmaulbeer, Brombeere.*

Knowtberry of the Scotch; Knot or Knotberry, old English.

The fruit of this plant is sometimes called the Mountain Raspberry. It grows on alpine turfy bogs in elevated situations: hence its common name Cloudberry. The plant flowers in June, soon after the snow has melted, and the pleasant-looking fruit scarcely ripens in August before it is again overwhelmed with its winter covering. Its very hardihood makes it extremely difficult to cultivate, and its wild mountainous habits are as difficult to reconcile to civilization as those of the animal creation by which it is surrounded in its native districts. The snow preserves the fruit, and is

used by the Laplanders as well as by the Scottish Highlanders for that purpose. By Northern nations the Cloudberry is esteemed as a most grateful and useful fruit. Its taste is pleasant, superior to that of wild strawberries, and very delicious when boiled with sugar into a preserve. The Laplanders bury the fruit under the snow, and thus preserve it fresh for a long period. They bruise the berries, and eat them with the milk of the reindeer, and sometimes make a jelly of them boiled with fish. In Norway and Sweden the Cloudberry is exceedingly abundant, growing even near the North Cape. In the autumn the berries are collected and sent to Stockholm, where they are in great esteem, not only as an article of diet, but as a medicinal remedy. In Sweden, vinegar is made by fermenting the berries. Dr. Clarke, the celebrated traveller, mentions the Cloudberry several times in his "Northern Wanderings." In Lapland, he says, "Whenever we walked near the river, we found whole acres covered with these blushing berries (at first crimson, afterwards becoming yellow), hanging so thick that we could not avoid treading on them." He also says: "The same plant is found upon some of the highest mountains and in some of the great bogs of the North of England, on which account, perhaps, it is called Cloudberry in our own island." He ascribes his own recovery from a dangerous fever to the beneficial effects of this fruit, and says: "Mr. Grape's children came into the room, bringing with them two or three gallons of the fruit of the Cloudberry, or *Rubus Chamemorus*. This plant grows so abundantly near the river, that it is easy to gather bushels of the fruit. As the large berry ripens—which is as big as the top of a man's thumb—its colour, at first scarlet, becomes yellow. When eaten with sugar and cream, it is cooling and delicious, and tastes like the large American hautboy strawberry. Little did the author dream of the blessed effects he was to experience by tasting of the offering brought by these little children, who, proud of having their gifts accepted, would gladly run and gather daily a fresh supply, which was as often blended with cream and sugar by the hands of his mother, until, at last, he perceived that his fever rapidly abated, his spirits and his appetite returned, and, when sinking under a disorder so obstinate that it seemed incurable, the blessings of health were restored to him when he had reason to believe he should have found his grave. The symptoms of amendment were almost instantaneous after eating of these berries."

It has been suggested that the gardener might find means to render this plant a valuable and useful addition to the kitchen garden by crossing the flowers with those of the bramble and the raspberry, and thus overcoming the tendency to flourish only away from cultivation.

A sprig of the Cloudberry is the badge of the Highland clan McFarlane.

SPECIES II.—*RUBUS SAXATILIS*. Linn.

PLATE CCCCXLI.

Rootstock creeping, stoloniferous. Stems herbaceous, simple, the flowering ones erect, the barren shoots (often absent) procumbent, unarmed or prickly; prickles none, or very small. Leaves stalked, ternate; leaflets thin, green below, rhomboid-oval, the lateral ones ovate, coarsely and irregularly serrate; the serratures with rounded margins. Stipules free, strapshaped-lanceolate. Flowers few, in a terminal corymbose cyme. Petals strapshaped-oblancheolate, narrower than the sepals, erect. Fruit not separating

from the receptacle, consisting of a few large juicy drupes with a very tender skin, shining red when ripe.

Among rocky débris in woods, and by the sides of streams in hilly countries. Local, but occurring where the conditions for its growth are found, from Devonshire, Gloucestershire, and Derbyshire, to Orkney and Shetland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock woody, shortly creeping, much branched. Flowering-stems angular, produced from the rootstock, 6 to 18 inches long, the barren shoots (when present) from the base of the flowering-stems; the former erect or decumbent, sometimes 2 or 3 feet, and quite prostrate. Leaves few; leaflets 1 to 3 inches long, plicate, variable in shape and in the dentition of the margins; the central leaflet stalked. Stipules very slightly adnate. Flowers erect, $\frac{3}{8}$ inch across, white, in a very compact corymb, more rarely with a few branches beneath it so as to resemble a panicle. Calyx-segments triangular-lanceolate. Fruit claret-colour, about $\frac{1}{2}$ inch long, consisting of seldom more than 3 or 4 drupes, containing large pitted reticulated stones. Sepals reflexed in fruit. Plant pale-green, underside of the leaves a little paler. Stems, petioles, pedicels, and veins of the leaves clothed with short scattered woolly hairs. Prickles straight, patent or slightly declining, from a small compressed base.

Stone Bramble, Roebuck-berry.

French, *Ronce des Rochers*. German, *Felsen Brombeere*.

This plant resembles the strawberry more than the raspberry. The fruit is very small, but has a pleasant flavour when mixed with sugar to subdue its acidity. In Russia the berries are fermented with honey, and made into a strong spirit.

The Stone Bramble is the badge of the Highland McNabs.

SPECIES III.—*RUBUS IDÆUS*. Linn.

PLATE CCCCXLII.

Rootstock stoloniferous. Stem biennial, erect, round, pruinose, prickly; prickles very small and weak, those of the flowering-shoot deflexed from a compressed and elongated base. Leaves pinnate, with 2 pairs of leaflets, or ternate; leaflets ovate or oval, acuminate, irregularly and sharply serrated, hoary-white beneath. Stipules adnate. Flowers terminating the lateral branches and the main stem, in small corymbose cymes. Sepals roundish-ovate, acuminate, and cuspidate. Petals strapshaped-oblongate, erect. Fruit separable from the receptacle when ripe, consisting of numerous small

juicy drupes with a very tender skin, dim-red or ochreous when ripe.

In woods, thickets, and on heaths. Common, and pretty generally distributed.

England, Scotland, Ireland. Perennial. Early Summer.

Stem 2 to 3 feet high, the first year producing nothing but leaves, the second flowering-shoots, after which it decays. Leaflets variable in size, shape, and degree of dentition, the terminal one the largest, $\frac{3}{4}$ to 4 inches long. Stipules adnate for more than half their length, the free portion strapshaped-subulate. Flowers drooping, white, $\frac{3}{8}$ inch across. Sepals deltoid-ovate, cuspidate. Fruit in the wild plant $\frac{1}{2}$ to $\frac{3}{4}$ inch long; stones pitted, denticulated; fruiting-calyx reflexed.

Raspberry.

French, *Ronce Framboisier*. German, *Himbeere*.

The general appearance and taste of the fruit of this plant, which is in all respects a bramble, are too well known to need description, though it may not be known that cultivation does not appear to have improved its flavour, though greatly increasing its size. We read in old writers that this shrub grew on Mount Ida, of classical celebrity: hence its specific name. The pleasant taste of the fruit is well known, and as a preserve, boiled with sugar, it is especially delicious. Other preparations of the fruit, such as syrup and raspberry vinegar, are well known to housewives. There are two great varieties of Raspberries in cultivation,—the red and the white or yellow kinds. Of the red Raspberries there are some twenty sub-varieties, and of the pale-coloured sorts some three or four. Raspberry-bushes prosper most and bear the finest fruit in a light rich loamy soil. They are in their prime about the third or fourth year, and if well managed, continue in perfection five or six years; after which they are apt to decline in growth, and the fruit to become small. The fruit of the different varieties comes in from the end of June or July till October or later. As it ripens, it should be quickly gathered for immediate use, because when fully ripe it will not keep above two or three days before it moulds or becomes maggoty, and unfit to be used.

The Raspberry and the Strawberry form each interesting examples of the nature of fruits botanically considered;—the Strawberry which we eat being the fleshy receptacle on which are placed the little yellow fruits, and the Raspberry consisting of such fruits, soft and juicy, surrounding the hard woody receptacle, which is thrown aside. These examples can be understood and appreciated by the youngest observer.

SPECIES (?) IV.—**RUBUS LEESII.** *Bab.*

PLATE CCCXLIII.

Bab. Man. Brit. Bot. ed. v. p. 97. Lees, in Phyt. Ser. I. Vol. IV. p. 930.

Rootstock stoloniferous. Stem biennial, sub-erect or arching, round, minutely tomentose, prickly; prickles numerous, slender, straight, from a compressed bulbous base. Leaves ternate;

leaflets subsessile, roundish-ovate, the basal ones overlapping the terminal ones, irregularly serrate, hoary-white beneath, those at the base of the panicle often roundish-cordate and simple. Stipules adnate for two-thirds of their length. Flowers terminating the lateral branches and the main stem, in small corymbose cymes. Sepals triangular-lanceolate, cuspidate. Petals strapshaped-oblan-ceolate, erect. Fruit (?) "small, bright-crimson when ripe." — (Lees, *l. c.*)

In stony sub-alpine woods. Rare. Ilford Bridges, near Brendon, Devon, where it was found by Mr. Lees; Dunster, Somerset, by the Rev. W. H. Colman and Professor Babington.

England. Perennial. Summer.

A very remarkable plant, which I have only seen growing in the Cambridge Botanical Gardens, and there in habit it is exactly intermediate between the Raspberry and the Brambles. The habit in dried specimens is much nearer the Raspberry, with which it also agrees better in its technical characters; but the prickles have a less dilated base, the leaflets are much rounder and with the central leaflet rarely stalked, as is commonly the case with *R. Idæus*. The floral leaves resemble the ordinary leaves of *R. Chamæmorus*, while the barren stem is exceedingly similar to that of the fruticose *Rubi*. It may be a hybrid form, but I cannot think it probable that the species is a variety of *R. Idæus*. Mr. Lees states that he has only once found the fruit, and that the petals are often multiplied to 12 or 16. Professor Babington informs me that he has seen on garden plants of *R. Leesii* fine drupes, but without seeds in them.

Lees' Raspberry.

SPECIES V.—**RUBUS FRUTICOSUS.*** *Linn.*

PLATES CCCXLIV. to CCCCLVI.

Rootstock slightly or scarcely stoloniferous. Stems shrubby, biennial, usually arching during the first year, when they are barren, frequently rooting at the extremity late in the season, and flowering the second summer; prickles comparatively large and strong. Leaves stalked, digitate with 5 or 7 leaflets, or ternate,

* I have placed the fruticose Brambles under a single super-species, because, although the extreme forms are widely different, they are so completely connected by intermediate ones, that I find it utterly impossible to separate them into any groups answering to the usual idea of a species. Professor Babington's long and attentive study of this genus entitles him to be considered as the leading authority in Britain upon this sub-

rarely and only accidentally pinnate with 2 to 3 pairs of leaflets and an odd one; leaflets firm, green or white below, variable in shape, serrated. Basal portion of the stipules adnate. Flowers numerous, in small cymes combined into panicles. Petals oval-oblong, as broad as or broader than the sepals, spreading. Fruit not separating from the receptacle, consisting of usually numerous juicy cohering drupes with a rather firm skin, shining black when ripe, more rarely dull lurid-red, or of a few drupes with a thinner skin and a glaucous bloom on the surface.

Common Bramble, Blackberry.

French, *Ronce Commune*. German, *Verschiedenfarbige Brombeere*.

In Worcestershire the Brambles are known by the name of "*lawyers*;" why we can scarcely say; but we can imagine that those who have been unfortunate enough to come within the grasp of the law may mentally experience some of the pricking and tearing consequent on an incautious approach to a Bramble-bush. Who, however, has not, in his day, been a Blackberry-gatherer, and braved the perils of scratched hands

ject. I have therefore followed his division of the Brambles, only calling his *species sub-species*, although I must confess that it appears to me in some cases arbitrary to stop where he does, for his species contain, in several cases, various groups of forms as distinct from each other as his species themselves. The limits of the different groups can never be satisfactorily settled until they have been extensively raised from seed, in order to observe if any of the forms actually produce some of the others within a limited period of time. I understand that the experiment is being tried in the Cambridge Botanical Garden under the auspices of Professor Babington, and the results will no doubt appear in his anxiously-expected "*Monograph of the British Rubi*."

Considering the close resemblance of the sub-species, and the impossibility of representing their distinctive characters in plates of the size of those in "*English Botany*," it has been thought that it would add needlessly to the expense of the work to figure each of the forms mentioned in the text. The plates of the original work and supplement are retained in the present edition, and two others added, which were required in order that each of the sections into which they are divided by Professor Babington might be represented.

My warmest thanks are due to the Rev. A. Bloxam (whose knowledge of this difficult genus is second only to Professor Babington's) for the assistance he has kindly rendered me, without which I could not have relied on the nomenclature of my specimens. Mr. Bloxam has not only named my very numerous specimens of Brambles, and sent me examples of most of those which were absent from my herbarium, but has also supplied me with numerous notes upon the more obscure forms.

For Professor Babington's latest views on the genus I have trusted to the large collection of Rubi of the late Mr. Borrer, in the Kew Herbarium, which have been named by Professor Babington. When these appear to differ from the species of the "*Manual*" (ed. v.), I have, however, still followed the latter as the latest *published* authority.

and torn dresses to secure the ripe black fruit so much prized by youthful appetites? We can well remember with what joy we have set forth on a bright September day, crooked stick in hand, and an empty basket slung over the arm, to return in the evening with hands and face dyed with the purple juice, and enough fruit to furnish the larder with tarts and pies for many a day. We can speak with certainty of the advantage of a few slices of apple mixed with the Blackberries in tarts, and we have eaten a delicious jam or "rob" made in Scotland of Blackberries, not inferior to any other fruit. This species of Bramble is more common than any other, and also attains a greater size. The fruits are called in some parts of England "bumblekites," and in others "scald-berries," from the notion that they give children the "scald head;" but, as they have been eaten abundantly by young folks since the time of Pliny, we doubt the imputation. In some parts of France they are called *mûres sauvages* (wild mulberries), and are used for colouring wine: and the red muscat of Toulon is so coloured. In French Guiana, the fruit is gathered and given to pigs. The leaves are sometimes used for feeding silkworms, as a substitute for mulberry-leaves. In the hot summer of 1858, a number of cocoons of the silkworm were found upon some Brambles in Kent, the caterpillars having probably been hatched from some eggs accidentally scattered there. The silk produced was of good quality. The caterpillars seemed to have fed on various wild plants in the vicinity, as well as on the Bramble-leaves. Whether silkworms could be successfully reared here in that manner in ordinary seasons is very doubtful; but it would be worth a trial. The strong stiff stems of the Bramble make the best standards for kites, according to country boys, and the pliable ones are used for binding down thatch, being pegged down to prevent the straw being blown away by the wind, and also for the same purpose in beehives. In country churchyards we find them used for binding down graves, in the manner of osier-twigs. The green branches yield a black dye, which has been used to dye woollen and silk. According to Gerarde, a decoction of the leaves with honey makes a good and astringent gargle. The other species of *Rubus* yield edible fruits.

GROUP I.—SUBERECTI. *Bab.*

Barren stems usually sub-erect, not rooting at the end, glabrous or with distant hairs, destitute of gland-tipped setæ; prickles nearly uniform. Sepals with a narrow white-felted border externally.

SUB-SPECIES I.—*Rubus suberectus*. *Anders.*

PLATE CCCXLIV.

Bab. Man. Brit. Bot. ed. v. p. 97.

Barren stem erect or sub-erect, not rooting at the apex, angular with the angles obtuse at the top, smooth; prickles mostly confined to the angles of the stem, few, small, straight, from a narrow compressed base. Leaves of the barren stem quinate, ternate, or accidentally pinnate (from the central leaflet being divided into 3); leaflets thin, flat, rather finely serrate; terminal leaflet ovate, cordate at the base, acuminate at the apex;

basal leaflets sub-sessile; lateral leaflets of the flowering-shoot narrowed towards the base. Flowers in a nearly simple raceme, or a panicle with corymbose branches; rachis and pedicels sparingly pilose. Fruit dark red, with the sepals reflexed.

In boggy woods. Reported as common in Scotland and the West of England; more rare in the South, and not recorded from the eastern counties. This appears to be the only fruticose bramble that reaches as far North as Orkney; but as *R. suberectus* and *R. fissus* are not generally distinguished, much doubt rests on the distribution inferred from the localities given for *R. suberectus*.

England, Scotland, Ireland. Shrub. Summer.

Stems 2 to 8 feet high, at first erect, but trailing when weak, in which case, when it flowers the second year it produces numerous short fastigiate branches from the axils of the old leaves, as remarked by Mr. Lees in "Phytologist" for 1853, p. 929. Leaves rather flexible, green, rarely ternate except in the flowering-shoots. Fruit small, lurid red in all the fresh examples I have seen, but, according to Mr. Lees, becoming at length "raven-black."

Sub-erect Bramble.

SUB-SPECIES II.—*Rubus fissus*. *Lindley*.

Bab. Man. Brit. Bot. ed. v. p. 97.

Barren stem erect or sub-erect, not rooting at the apex, angular with the angles obtuse, smooth; prickles not confined to the angles of the stem, numerous, small, straight, from a large oblong compressed base. Leaves of the barren stem quinate, or accidentally pinnate (from the central leaflet being divided into 3), "with coriaceous plicate leaflets" (*Bab.*), rather finely serrate; terminal leaflet ovate, cordate at the base, acuminate at the apex; basal leaflet sessile; lateral leaflets of the flowering-shoot narrowed towards the base, "often gibbous at the base" (*Bab.*). Flowers in a simple raceme, or a panicle with corymbose branches; rachis and peduncles sparingly pilose. Fruit dark red, with the sepals "erect-patent" (*Bab.*).

On boggy heaths. Apparently not uncommon; for although in the "Manual" Professor Babington apparently restricts the name *R. fissus* to the plants found at Almond Park and West Felton, Salop, and Londonderry, Ireland, yet in the Kew Herbarium he applies that name to others from Argyleshire, Cumberland,

Westmoreland, Lancashire, Yorkshire, and Sussex. In a recent letter he adds various localities, from Forfar to the East Highlands.

England, Scotland, Ireland. Shrub. Summer.

This plant ought probably to be combined with *R. suberectus*, as is done by Mr. Lees. Mr. Bloxam makes this note on my specimens of *R. fissus*:—"I cannot see much difference between *R. suberectus* and *fissus*." Indeed, the larger and more numerous prickles and usually thicker leaflets appear to be the only differences between them.

From the specimens named *R. fissus* by Professor Babington, in the Herbarium of the late Mr. Borrer at Kew, it is evident that he has relinquished, as distinctive, the characters taken from the consistence of the leaves and the direction of the fruit-calyx, as the plant from North-east Yorkshire, collected by Mr. Mudd, and sent by Mr. Baker, which agrees in these points with the normal state of *R. suberectus*, he there names *R. fissus*.

Lesser sub-erect Bramble.

SUB-SPECIES III.—*Rubus plicatus*. *Weihe & Nees.*

PLATE CCCCXLV.

Bab. Man. Brit. Bot. ed. v. p. 97.

Barren stem sub-erect, angular with the angles very obtuse, smooth; prickles confined to the angles of the stem, strong, hooked or nearly straight from a large oblong base. Leaves of the barren stem quinate; leaflets rather thin, plicate, sparingly pilose beneath, finely and sharply irregularly dentate-serrate; "terminal leaflet cordate acuminate, basal leaflets usually sub-sessile; lateral leaflets of the flowering shoot rhomboidal-ovate, dilated at the base" (Bab.). Flowers in a raceme or panicle with rather short sub-corymbose branches; rachis and peduncles sparingly pilose. Fruit black when ripe, with the sepals reflexed.

In heathy places and in woods. Not very common, but widely distributed from Hants, Sussex, and Devon to Aberdeen, according to Professor Babington in "*Cybele Britannica*," Vol. III. p. 339, though the last locality may belong to *R. fissus*.

England, Scotland, Ireland. Shrub. Summer.

Prickles considerably larger, more hooked, and less uniform in size than in *R. suberectus* and *fissus*. Fruit larger and becoming quite black.

Professor Babington in the Kew Herbarium has confined the name *R. plicatus* to plants which have the terminal leaflet ovate,

rounded or narrowed at the base, and rather long-stalked, the lateral leaflets shortly stalked: the plants formerly named *R. plicatus*, which have cordate leaflets, he appears now to refer to *R. fissus*.

Plaited-leaved Bramble.

SUB-SPECIES IV.—*Rubus affinis*. *Weihe & Nees*.

Bab. Man. Brit. Bot. ed. v. p. 98.

Barren stem sub-erect, or arching but not rooting at the apex, angular with the angles somewhat rounded, smooth; prickles confined to the angles of the stem, very strong, hooked or declining from a large compressed base. Leaves of the barren stem quinate with the leaflets sub-coriaceous, "wavy towards the end" (*Bab.*), opaque above, pale green and softly and densely pubescent beneath, finely, acutely, and irregularly dentate-serrate; terminal leaflet oval, acuminate, rounded at the base; basal leaflets stalked; lateral leaflets of the flowering-shoot often narrowed towards the base. Flowers in a compound panicle, with the lateral branches ascending, often elongated, corymbose; rachis and peduncles pilose. Fruit black when ripe, with the sepals spreading or reflexed.

On heaths and in open woods. Not uncommon and pretty generally distributed, being found, according to Professor Babington in "*Cybele Britannica*," Vol. III., from Sussex to Perth and Argyle.

England, Scotland, Ireland. Shrub. Summer.

This species forms the connecting link between the *Suberecti* and the *Rhamnifolii*, between which it is intermediate in habit. It is a larger and stronger plant than *R. plicatus*, and with the leaves much more softly pubescent beneath. The fruit is considerably larger, with the sepals at first reflexed, but afterwards rising until they are spreading, or spreading-ascending.

Professor Babington considers *R. lentiginosus* of Lees (*Phyt.* 1853, p. 927), which has narrower more glabrous sharply cut leaflets and smaller petals, as a form of the above.

Intermediate Bramble.

GROUP II.—*RHAMNIFOLII*. *Bab.*

Barren stems arching and rooting at the end, slightly pilose with rather distant hairs, not felted nor glaucous, and destitute of gland-tipped setæ; prickles nearly uniform. Sepals felted, concolorous.

SUB-SPECIES V.—*Rubus Lindleianus*. *Lees*.*Bab. Man. Brit. Bot. ed. v. p. 98.**R. nitidus, Bell Salt. Bab. olim, non W. & N.*

Barren stem arching or sub-erect, rooting at the apex, angular, furrowed, hairy at the base, sub-glabrous towards the apex; prickles confined to the angles of the stem, strong, declining or hooked, from a large much-compressed base. Leaves of the barren stem quinate; leaflets sub-coriaceous, shining above, greyish-green, opaque and pubescent, and often whitish-felted beneath, finely and unequally dentate-serrate; terminal leaflet rhomboidal-oval or rhomboidal-elliptical acuminate, wedge-shaped at the base; basal leaflets stalked, not overlapping the intermediate ones. Flowers in an elongate compact compound panicle, with rather short spreading corymbose branches; rachis and peduncles densely pubescent, very prickly.

In hedges and thickets. Not uncommon, occurring from Hants to Renfrew.—(*Bab. in Cyb. Brit.*)

England, Scotland, Ireland. Shrub. Summer.

This plant has somewhat the habit of *R. plicatus*, but besides having the barren stem more arching, the panicle has more numerous, more spreading and shorter lateral branches, and the leaflets are paler, often felted beneath. The flowers are smaller than those of *R. plicatus*, the fruit about the same size, but smaller than that of *R. affinis*.

*Lindley's Bramble.*SUB-SPECIES VI.—*Rubus rhamnofolius*. *Weihe & Nees*.

PLATE CCCXLVI.

*Bab. Man. Brit. Bot. ed. v. p. 98.**R. cordifolius, W. & N.*

Barren stem arching, angular, furrowed, smooth; prickles confined to the angles of the stem, strong, declining or spreading, from a large compressed base. Leaves of the barren stem quinate; leaflets coriaceous, flat, shining above, opaque, greyish-green and pubescent or often whitish-felted beneath, very finely acutely and irregularly dentate-serrate; terminal leaflet roundish or oval rhomboidal, cordate or rounded at the base, shortly cuspidate; basal leaflets stalked, not overlapping the intermediate ones. Flowers in an elongate compound panicle compact at the apex, with rather short spreading-ascending corymbose upper branches,

lower branches frequently elongate and distant; rachis slightly pubescent, branches and pedicels densely so, sparingly prickly.

In woods and hedges. Common from Hants to Arran; but as in the 5th edition of the Manual Professor Babington considers it restricted to England, it is probable he thinks the Scotch localities, given previously by him in "Cyb. Brit.," do not belong to this form.

England, Scotland, Ireland. Shrub. Summer.

R. rhamnifolius bears considerable resemblance to *R. Lindleyanus*, but has the stem smoother, generally reddish, with the prickles shorter, more distant and not so suddenly contracted above the base; the leaflets are generally broader though very variable in shape, more finely and evenly serrate; the branches of the panicle are less spreading, the lower ones usually remote and elongated on large examples. The flowers and fruit are larger.

Buckthorn-leaved Bramble.

German, *Straussartige Brombeere*.

SUB-SPECIES VII.—*Rubus incurvatus*. Bab.

Bab. Man. Brit. Bot. ed. v. p. 98.

Barren stem arching-prostrate, angular, scarcely furrowed, hairy; prickles confined to the angles of the stem, rather strong, spreading or declining, from a rather small base. Leaves of the barren stem quinate; leaflets coriaceous, with "incurved wavy edges," shining above, with a few scattered hairs, opaque, and whitish-green-felted beneath, very irregularly dentate-serrate; terminal leaflet broadly ovate or roundish, cordate, cuspidate or acuminate; basal leaflets stalked, slightly overlapping the intermediate ones. Flowers in a rather short slender panicle, with very short ascending corymbose branches; rachis and pedicels densely pubescent, sparingly prickly.

On heaths and in open woods. Rare,—in Sussex, Pembroke, Carnarvon, and Westmoreland, and to these localities, in the fifth edition of the Manual, Professor Babington adds Scotland; a specimen from Dunoon, Argyleshire, being apparently referable to *R. incurvatus*.

England, Scotland. Shrub. Summer.

I am acquainted with this bramble only from dried specimens, which I owe to the kindness of the Rev. W. W. Newbould. These have the underside of the leaves more densely and velvety pubescent

than in any of the preceding. The panicle is narrower and more crowded; the leaflets irregularly toothed and as broad as in the broadest forms of *R. rhamnifolius*, from which it further differs, according to descriptions, by having the edges of the leaves incurved.

Incurved-leaved Bramble.

SUB-SPECIES VIII.—*Rubus imbricatus.* *Hort.*

Bab. Man. Brit. Bot. ed. v. p. 89.

Barren stem arching-prostrate, angular; prickles confined to the angles of the stem, small, declining, from a long compressed base. Leaves of the barren stem quinate; leaflets coriaceous, "convex," opaque and nearly glabrous above, paler and with scattered hairs beneath; terminal leaflet broadly ovate or roundish, cordate, cuspidate; basal leaflets overlapping the intermediate, and the intermediate the terminal one. Flowers in a slender lax panicle with elongate racemose branches; rachis and pedicels slightly pubescent and sparingly prickly.

In open places in woods by the banks of the Wye below Monmouth, in the counties of Gloucester and Monmouth.

England. Shrub. Summer.

I have seen this plant only in a dried state in Mr. Borrer's herbarium at Kew.

Imbricated-leaved Bramble.

SUB-SPECIES IX.—*Rubus latifolius.* *Bab.*

Bab. Man. Brit. Bot. ed. v. p. 99.

"*Barren stem* arcuate-prostrate angular, furrowed; prickles small, slender, compressed, slightly declining from a very long compressed base. Leaves quinate, leaflets thin, pilose on both sides, coarsely and doubly dentate, not felted beneath; *terminal leaflet cordate-acuminate*; basal leaflets sessile, imbricate; panicle short, leafy, hairy, with ascending few-flowered corymbose branches, its top and pedicels felted and hairy, its prickles slender, declining." —(*Bab. Man., l.c.*)

Open woods and hedges. Cramond Bridge and Collinton near Edinburgh, Falls of Acharn, Perthshire, and Monmouth.

England, Scotland. Shrub. Summer.

Of this I have seen no specimens.

Broad-leaved Bramble.

GROUP III.—VILLICAULES. *Bab.*

Barren stems arching and rooting at the end, generally pilose, often felted, and having sub-sessile glands rarely with a few gland-tipped setæ; prickles confined to the angles of the stem, nearly uniform, or with a few smaller ones between the rows.

SUB-GROUP I.—DISCOLORES. *Bab.*

Stem with short copious pubescence; prickles strong, uniform. Leaves when mature white beneath with felted pubescence.

SUB-SPECIES X.—*Rubus discolor.* *Weihe & Nees.*

PLATE CCCCXLVII.

Bab. Man. Brit. Bot. ed. v. p. 99.

R. fruticosus, Sm. Eng. Bot. No. 715.

Stem arching, angular, furrowed, more or less thickly clothed with short white scattered stellate pubescence; prickles strong, declining, from a large slightly compressed base. Leaves of the barren stem quinate; leaflets coriaceous, often deflexed at the margins, glabrous and slightly shining above, white beneath, with very compact short close felt, irregularly or doubly serrate; terminal leaflet oblong-obovate, cuspidate; basal leaflets stalked, not overlapping, sometimes joined to the intermediate ones. Flowers in a long narrow panicle with the lateral branches short, spreading corymbose, the lower ones often elongate, ascending, and racemose; rachis and pedicels densely white-felted, and with strong hooked prickles. Calyx entirely white-felted. Petals pink.

In hedges and thickets. Very common, and generally distributed in England; apparently rare in Scotland, except in the southern counties.

England, Scotland, Ireland. Shrub. Summer.

A well-marked and handsome form readily distinguishable by the leaflets being pure white underneath, and with the edges generally deflexed, and by its large pink flowers.

This is one of the commonest, if not the commonest, bramble in England, but I do not remember seeing it in Scotland except in Dumfriesshire and Kirkeudbright.

SUB-SPECIES XI.—*Rubus thyrsoides*. Wimm.

Bab. Man. Brit. Bot. ed. v. p. 100.

Barren stem arching-erect, angular, furrowed, sub-glabrous; prickles rather strong, spreading or declining, from a large slightly compressed base. Leaves of the barren stem quinate; leaflets subcoriaceous, flat, glabrous above, grey-felted beneath, with longer scattered hairs amongst the felt; sharply irregularly or doubly serrate; terminal leaflet rhomboidal-oval, acuminate. Flowers in a long narrow panicle, with the lateral branches spreading corymbose, the lower ones but slightly elongated, ascending, and corymbose; rachis and peduncles felted, with numerous longer hairs amongst the felt, and with strong hooked prickles. Sepals felted with longer hairs amongst the felt. Petals white.

In hedges and thickets, sparingly but widely distributed throughout England.

England.

This form resembles the last, but has the leaflets attenuated at the apex, not pure white beneath, and with all the felted parts interspersed with longer hairs. The flowers also are white instead of pink.

Professor Babington considers *R. macroanthus* (Bloxam) as a large-flowered form of *R. thyrsoides*.

Thyrsus-flowered Bramble.

SUB-GROUP II.—SYLVATICI. *Bab.*

Barren stem with spreading woolly hairs, often dense, and frequently deciduous. Prickles moderately strong, mostly uniform. Leaves generally green, more rarely white-felted beneath.

SUB-SPECIES XII.—*Rubus leucostachys*. Sm.

PLATE CCCCXLVIII.

Bab. Man. Brit. Bot. ed. v. p. 100.

Barren stem prostrate-arching, angular, densely clothed with woolly hairs; prickles numerous, spreading or slightly deflexed, from a slightly dilated much-compressed base. Leaves of the barren stem quinate; leaflets subcoriaceous, flat, glabrous and slightly shining above, and greyish-felted beneath, with longer hairs interspersed, stiffly-hairy on the veins, finely and irregularly den-

tate-serrate; terminal leaflet roundish or broadly obovate-cuspidate. Flowers in an elongate panicle with very short few-flowered spreading lateral branches; rachis and pedicels felted and densely stiffly-hairy, having long slender spreading or slightly declining prickles and a few aciculi and gland-tipped setæ. Sepals felted and stiffly-hairy.

α.

Prickles uniform, confined to the angles of the stem. Terminal leaflet rounded or slightly narrowed towards the base.

β, R. vestitus. Weihe.

Prickles unequal, scattered; leaflets roundish, cordate.

In hedges and thickets. Not uncommon, and generally distributed in England.

England, Scotland, Ireland. Shrub. Summer.

A well-marked form, easily known from the two preceding by its densely hairy stem and much broader leaflets, and by having the felt intermixed with numerous stiff hairs, which are especially abundant on the veins of the leaves beneath and on the branches of the panicle.

Long-clustered Bramble.

SUB-SPECIES XIII.—*Rubus Grabowskii. Weihe.*

PLATE CCCCXLIX.

Bab. Man. Brit. Bot. ed. v. p. 100.

R. carpinifolius, Borrer in E. B. S. No. 2664.

Barren stem arching, angular, sub-glabrous; prickles numerous, rather strong, deflexed, from a large slightly compressed base. Leaves of the barren stem quinate; leaflets sub-coriaceous, plicate, glabrous and opaque above, grey-felted beneath, with longer hairs interspersed, pilose on the veins, finely and irregularly denticulate; terminal leaflet roundish or transversely ovate, cordate at the base, abruptly cuspidate. Flowers in an elongate leafy panicle, with short ascending branches, the upper ones corymbose, the lower sub-racemose; rachis with scattered hairs, pedicels densely felted and pilose, having very numerous long, slender, slightly-declining prickles. Sepals felted and pilose.

In hedges and thickets. Rare. At Cadeby, Leicestershire. The

plant figured in English Botany is stated by Mr. Borrer to be from Henfield, Sussex.

England. Shrub. Summer.

Remarkable from its very broad, shortly cuspidate, plicate leaflets sparingly felted below, and from the very numerous prickles on the rachis, petioles, partial petioles and midribs of the leaves. Of this plant I have only seen dried specimens.

Grabowski's Bramble.

SUB-SPECIES XIV.—*Rubus Colemanni.* *Blox.*

Bab. Man. Brit. Bot. ed. v. p. 101.

R. fusco-ater β *Colemanni*, *Bab. olim.*

Barren stem arching, angular, sub-glabrous; prickles numerous, rather strong, slightly deflexed, from a large much-compressed base. Leaves of the barren stem quinate; leaflets rather thin, convex, sub-glabrous and opaque above, green beneath, with scattered hairs most abundant on the veins; finely and irregularly dentate; terminal leaflet roundish, cordate at the base, shortly acuminate. Flowers in an elongate leafy panicle with short ascending branches, the upper ones corymbose, the lower ones sometimes sub-racemose; rachis and peduncles with short hairs, gland-tipped setæ, and numerous very unequal slender straight slightly-deflexed prickles.

Hedges near Coventry, Warwickshire; and Packington, Leicestershire.

England. Shrub. Summer.

Of this plant I have seen only dried specimens. Its position appears to be doubtful, but Professor Babington considers it to be most allied to *R. Grabowskii*.

Coleman's Bramble.

SUB-SPECIES XV.—*Rubus Salteri.* *Bab.*

Bab. Man. Brit. Bot. ed. v. p. 101.

Barren stem arching-prostrate, slightly angular, sub-glabrous; prickles numerous, slender, spreading, or slightly deflexed, from a comparatively small compressed base. Leaves of the barren stem quinate; leaflets thin, glabrous and green on both sides, with a few scattered hairs on the veins and margins both above and beneath, acutely doubly dentate-serrate; terminal leaflet oval,

sub-cordate at the base, abruptly acuminate or cuspidate. Flowers in a long lax panicle, leafy below, with rather short spreading corymbose branches, or the lower ones longer, ascending and sub-racemose; rachis and pedicels pilose, sometimes with a few short gland-tipped setæ, with numerous strong, straight, and hooked prickles. Calyx felted and pilose.

α, R. Salteri. Bab. olim.

Leaflets lobed or doubly serrate. Rachis of cylindrical panicle nearly straight; branches corymbose, patent, a few sunken setæ on the panicle and calyx. Sepals erect-patent. Petals white.

β, R. calvatus. Blox. (in Fl. Leicester, p. 42).

Leaflets coarsely and doubly dentate-serrate. Panicle lax, with the rachis flexuous, upper branches corymbose, spreading, lower ones ascending and sub-racemose; numerous short gland-tipped setæ on the rachis and branches. Sepals slightly reflexed. Petals pink "or deep rose-colour" (Bab.).

Open woods, hedges, and on heaths. Rare. *α* in Apse-Castle Wood, near Shanklin, Isle of Wight; *β* in Shropshire, Leicestershire, and Surrey.

England, Ireland. Shrub. Summer.

The form *α* I have never seen, but Professor Babington considers it and *R. calvatus* as the extremes of one species, while the Rev. A. Bloxam says: "*R. calvatus* is very distinct from *R. Salteri* as a species." However this discrepancy may be explained, as Mr. Bloxam has kindly sent me a specimen, on the ticket of which is written: "Sent to me as *R. Salteri*, and much resembling a specimen so named by Dr. Bell Salter." I should have had no hesitation in referring this specimen to *R. Balfourianus*, and Dr. Bell Salter confounded the two. — (Bot. Gazette, Vol. II. pp. 119, 120.)

Salter's Bramble.

SUB-SPECIES XVI.—*Rubus carpinifolius. Weihe & Nees.*

Bab. Man. Brit. Bot. ed. v. p. 101.

Barren stem erect-arching angular, sub-glabrous; prickles numerous, slender, declining, from a long compressed base. Leaves of the barren stem quinate; leaflets thin, sparingly pilose above, paler and densely pilose on the veins beneath, finely and evenly

acutely serrate; terminal leaflet obovate-oval or oval, rounded or sub-cordate towards the base, shortly acuminate at the apex. Flowers in a narrow panicle, with short erect-spreading corymbose branches throughout; rachis and pedicels densely pilose, with straight declining unequal prickles, and a few setæ about as long as the hairs. Calyx felted and pilose, loosely reflexed in fruit.

In open places in hilly districts. Apparently rare.

England, Scotland, Ireland. Shrub. Summer.

A doubtful plant, about which Professor Babington and the Rev. A. Bloxam do not agree: I have described specimens named by the former.

Hornbeam-leaved Bramble.

SUB-SPECIES XVII.—**Rubus villicaulis.** *Weihe & Nees.*

Bab. Man. Brit. Bot. ed. v. p. 101.

R. villicaulis & pampinosus, Bab. olim.

Barren stem arching, angular, sparingly pilose with spreading hairs; prickles numerous, strong, short, nearly spreading, from a slightly dilated much compressed base. Leaves of the barren stem quinate; leaflets thin, sub-glabrous above, pale green, softly pubescent, and densely setose-hairy on the veins beneath, doubly serrate; terminal leaflet obovate or roundish-obovate, rounded or sub-cordate at the base, abruptly acuminate. Flowers in a long lax panicle with spreading ascending corymbose branches; rachis and peduncles felted and stiffly-hairy, with numerous slender declining prickles. Sepals felted, stiffly-hairy, loosely reflexed in front.

In woods and hedges. Apparently widely distributed throughout England, and also given as Scotch and Irish by Professor Babington.

England, Scotland, Ireland. Shrub. Summer.

I am but imperfectly acquainted with this species, knowing it only from dried specimens, having probably confounded it when in the fields with some of the forms of *R. macrophyllus*. Professor Babington considers *R. vulgaris* (Lindley) a form of this with more aciculi and strong deciduous-headed setæ on the stem.

Pilose-stemmed Bramble.

SUB-SPECIES XVIII.—*Rubus macrophyllus*. *Weihe*.

PLATE CCCCL.

Bab. Man. Brit. Bot. ed. v. p. 102.

Barren stem arching-prostrate, angular, sparingly pilose with spreading hairs, prickles numerous, slender, short, deflexed, from a dilated slightly compressed base. Leaves of the barren stem quinate or ternate; leaflets thin, sub-glabrous or pilose above, green, felted beneath or densely hairy only on the veins; terminal leaflet oval, obovate, sub-rhomboidal or roundish, rounded, sub-cordate or narrowed at the base, shortly acuminate or cuspidate at the apex, doubly or irregularly and often bluntly serrate. Flowers in a slender panicle, with the upper branches short, spreading or corymbose, the lower ones sometimes longer and sub-racemose; rachis and peduncles more or less densely pilose, with a few gland-tipped setæ and numerous slender, straight, declining prickles. Sepals felted, stiffly-hairy, loosely reflexed.

“*α*, *R. umbrosus*. Arrhenius.

“Prickles slender from a large base. Leaves quinate; *leaflets doubly and patently dentate*, velvety or slightly felted beneath; terminal leaflet broadly obovate cuspidate; panicle with slender prickles. *Tip of sepals linear*. Corolla rose-coloured. *R. carpinifolius* (Blox.). Terminal leaflet sometimes divided into three.

“*β*, *R. macrophyllus*. Weihe & Nees.

“Prickles small, short, from a very large base. Leaves quinate or ternate; leaflets irregularly dentate-serrate, hairy only on the veins, and rarely felted beneath; terminal leaflet elliptical or broadly obovate; panicle with slender prickles. *Sepals leaf-pointed*. Corolla white. (R. G. 12.) Leaflets often very large. Stem often with a few aciculi and setæ. A very variable plant.

“*γ*, *R. Schlechtendalii*. Weihe & Nees.

“Prickles short, small, from a very large base. Leaves usually quinate; *leaflets doubly and patently dentate*, usually hairy only on the veins, not felted beneath; *terminal leaflet long, obovate*, acuminate, wedge-shaped or sub-cordate at the base; panicle with strong prickles. Sepals with a linear point. Corolla white. (R. G. 11.) Hardly distinguishable from var. *β*.

“ δ , *R. amplificatus*. Lees.

“Prickles short, from a very large base. Leaves usually quinate; *leaflets* somewhat doubly patently dentate, *hairy only on the veins beneath*, not felted; terminal leaflet broadly obovate, acuminate. Panicle very large, its prickles strong, compressed from a very large base. Sepals usually leaf-pointed. Corolla white or pinkish. Remarkable for the very strong prickles with exceedingly long compressed bases on the panicle.

“ ϵ , *glabratus*. Bab.

“Prickles short from a very large base. Leaves quinate; *leaflets* irregularly or rather doubly dentate, *slightly hairy on the veins beneath*, terminal leaflet roundly cordate or broadly obovate, subcordate; panicle with slender prickles. Sepals (apparently) leaf-pointed. Leaves nearly glabrous beneath; terminal leaflets very round.”—(Bab. Man. l. c.)

Woods and copses. Common, and generally distributed.

England, Scotland, Ireland. Shrub. Summer.

A very variable plant, but yet I cannot think that all the forms referred to it by Professor Babington are mere varieties.

I judge of these from the specimens named by him in the Kew Herbarium, many of which I am unable to refer to any of the varieties given in the Manual, especially one with the leaflets white beneath, which I suppose he would include under var. α . Between vars. β and γ I see little if any difference, judging from the specimens so named. δ appears to be one of the commonest forms; ϵ I have never seen at all.

Large-leaved Bramble.

SUB-GROUP III.—SPECTABILES. Bab.

Barren stem with the pubescence usually dense and often deciduous; also generally with a few gland-tipped setæ and aciculi; prickles rather unequal. Leaves green beneath, not felted.

SUB-SPECIES XIX.—*Rubus mucronulatus*. Boreau.

PLATE CCCCLI.

Bab. Man. Brit. Bot. ed. v. p. 103.

R. mucronatus, *Blox.* in Fl. Leicester, p. 43; and *Bab. olim* (non *Seringe*).

Barren stem arching, bluntly angular or nearly round, with

spreading pubescence. Prickles very few, weak, straight, declining, from a small oblong base. Leaves of the barren stem quinate, or more rarely ternate; leaflets rather thick, green on both sides, with a few scattered hairs above, rather densely hairy on the veins beneath, finely irregularly and sharply serrate; terminal leaflet roundish or roundish-obovate cordate at the base, and abruptly cuspidate. Panicle small, narrow, with ascending branches, the upper ones often simple and 1-flowered, the lower ones corymbosely 2- or rarely 3-flowered; rachis felted and setose, with numerous long gland-tipped setæ and a few small declining straight slender prickles.

In woods, thickets, and hedges. Apparently rather rare. It is known to occur in Shropshire, Warwickshire, Leicestershire, Yorkshire, and Argyleshire.

England, Scotland. Shrub. Summer.

A well-defined form, recognizable by its abruptly cuspidate leaflets, and nearly simple panicle with numerous gland-tipped setæ. Petals pale pink. Fruit-calyx reflexed.

Cuspidate-leaved Bramble.

SUB-SPECIES XX.—**Rubus Sprengelii.** *Weihe.*

Bab. Man. Brit. Bot. ed. v. p. 103.

Barren stem prostrate, rounded, with remote spreading pubescence; prickles numerous, unequal, rather small, straight or slightly hooked, from a rather large much compressed base. Leaves quinate or ternate; leaflets thin, green on both sides, sub-glabrous above, sparingly hairy on the veins beneath, rather finely unequally or doubly serrate; terminal leaflet oval or obovate-oval, acuminate, rounded or sub-cordate at the base, scarcely cuspidate. Flowers in a lax panicle with short spreading-ascending corymbose branches; rachis and peduncles densely hairy, with a few short gland-tipped setæ and slender slightly hooked compressed spines.

α , *R. Borreri.* Bell Salt.

Barren stem arching-prostrate, rather stout, with a few scattered setæ and aciculi. Leaves mostly quinate. Panicle many-flowered.

β , *R. Sprengelii.* *Weihe.*

Barren stem prostrate, slender with scarcely any setæ or aciculi. Leaves usually ternate. Panicle few-flowered, lax.

γ, R. rubicolor. Blox. MS.

Barren stem arching, very stout, prickles numerous, nearly destitute of gland-tipped setæ and aciculi. Leaves quinate; terminal leaflet oblong obovate-cuspidate. Panicle lax, many-flowered; rachis more densely setose, with numerous strong prickles and a few aciculi and gland-tipped setæ.

On heaths and in woods. Not uncommon in the West of England, from the Isle of Wight to Westmoreland. *γ* near Mansetter, Warwickshire (Rev. A. Bloxam), from which place he has kindly furnished me with an example.

England. Shrub. Summer.

A well-marked plant. *β* rather a weak state than a variety. *γ*, which Mr. Bloxam considers distinct, a much larger, redder, and more hairy plant than *α* and *β*, with the panicle longer and more slender and interrupted, and the rachis more densely hairy, with more numerous spines and gland-tipped hairs; sepals narrower and more decidedly reflexed.

Sprengel's Bramble.

SUB-GROUP IV.—RADULÆ.

Stem pubescent, with deciduous gland-tipped setæ and aciculi, which are situated on small points; the latter remain and render the stem rough after the setæ have disappeared; prickles nearly equal.

SUB-SPECIES XXI.—*Rubus Bloxamii.* Lees.

Bab. Man. Brit. Bot. ed. v. p. 103.

Barren stem arching-prostrate, bluntly angular, with scattered woolly hairs; prickles small, straight, somewhat spreading, from a slightly dilated base; aciculi and gland-tipped setæ short, numerous. Leaves of the barren stem quinate or ternate; leaflets thin, sparingly hairy above, densely so on the veins beneath, coarsely doubly dentate-serrate; terminal leaflet roundish-obovate, sub-cordate at the base, abruptly cuspidate. Flowers in a long leafy panicle, corymbose at the top; branches elongated, erect, or patent, paniculate; rachis shortly and densely hairy, and with numerous slender declining or hooked prickles and aciculi, and very numerous gland-tipped setæ.

In woods. Rather rare; principally in the south and west mid-land counties.

England. Shrub. Summer.

A large coarse plant with a very compound panicle, sometimes 2 or 3 feet long, and leafy nearly to the summit. Stem with very numerous stout rather short prickles.

Bloxam's Bramble.

SUB-SPECIES XXII.—*Rubus Hystrix*. *Weihe*.

Bab. Man. Brit. Bot. ed. v. p. 103.

Stem arching-prostrate, bluntly angular, stiffly-hairy; prickles very numerous, unequal, small, straight, somewhat spreading, from a rather small much compressed base; aciculi and gland-tipped setæ numerous. Leaves quinate or ternate; leaflets sub-coriaceous, green on both sides, sparingly hairy above, densely so beneath, especially on the veins, sharply and irregularly or doubly serrate or dentate-serrate; terminal leaflet broadly oval or obovate-oval, rounded at the base, acuminate-cuspidate. Flowers in a long leafy panicle with the branches short, spreading or the lower ones ascending, corymbose; rachis densely pubescent and stiffly-hairy, with very numerous unequal gland-tipped setæ and aciculi, and numerous unequal slender subulate somewhat spreading or declining prickles. Sepals lanceolate-acuminate, "loosely adpressed to the fruit."—(Bab.)

In hedges and thickets. Not uncommon in England.

England, Ireland. Shrub. Summer.

Hedgehog Bramble.

SUB-SPECIES XXIII.—*Rubus rosaceus*. *Weihe*.

Bab. Man. Brit. Bot. ed. v. p. 104.

Barren stem arching-prostrate, angular, hairy; prickles very unequal, rather small, straight, slightly declining, from a rather long compressed base; aciculi and gland-tipped setæ numerous. Leaves quinate or ternate; leaflets rather thin, green on both sides, sparingly pilose above, densely so on the veins beneath, unequally and sharply serrate; terminal leaflet oval or oval-obovate, sub-cordate at the base, acuminate-cuspidate. Flowers in a leafy sub-pyramidal truncate panicle, with the upper branches spreading, simple or corymbose, the lower ascending and sometimes racemose; rachis

and pedicels stiffly-hairy with very numerous gland-tipped setæ, aciculi, and numerous slender subulate declining or spreading prickles. Sepals lanceolate-acuminate, loosely applied to the fruit.

In woods and hedges. Apparently rare.

England, Scotland, Ireland. Shrub. Summer.

A doubtful plant. Professor Babington thinks it is perhaps not distinct from *R. Hystrix*, differing chiefly in its abrupt pyramidal panicle, and more unequal prickles, the smaller ones scarcely exceeding the aciculi in length. The Rev. A. Bloxam also considers it as very closely allied to *R. Hystrix*.

Rose-flowered Bramble.

SUB-SPECIES XXIV.—*Rubus pygmæus*. *Weile.*

Bab. Man. Brit. Bot. ed. v. p. 104.

R. hirtus β *Menkii*, *Bab. olim.*

Barren stems arching-prostrate, roundish, hairy; prickles very numerous, slender, declining, from a slightly dilated base; aciculi and gland-tipped setæ very numerous and unequal. Leaves of the barren stem quinate; leaflets green on both sides, paler below, sparingly hairy below, more densely so on the veins beneath, coarsely and unequally doubly serrate; terminal leaflet oval, rounded or sub-cordate at the base, acuminate. Flowers in a long narrow leafy panicle, with short spreading corymbose branches; rachis and pedicels with very numerous hairs, gland-tipped setæ, aciculi and slender declining prickles. Sepals ovate-acuminate, with aciculi and long rather-stiff hairs, loosely reflexed from the fruit.

In hedges and borders of woods. Rare. At Eridge, near Tunbridge Wells, and near Pinner, Middlesex.

England. Shrub. Summer.

Of this plant I have only seen the specimens from Tunbridge Wells, in the collection of the late Mr. Borrer, at Kew.

Dwarf Bramble.

SUB-SPECIES XXV.—*Rubus scaber*. *Weile.*

Bab. Man. Brit. Bot. ed. v. p. 104.

R. Babingtonii, *Bell Salt.*

Barren stem arching-prostrate, bluntly angular, furrowed, sparingly hairy; prickles numerous, nearly equal, short, strong, hooked,

from a long compressed base; setæ and aciculi few and short. Leaves of the barren stem ternate or quinate; leaflets thin, green on both sides, sparingly pilose above and on the veins beneath, doubly dentate-serrate; terminal leaflet oval, sub-cordate, acuminate. Flowers in a large pyramidal blunt-topped panicle with corymbose branches, the upper spreading, the lower ascending; rachis and pedicels densely stiffly-hairy, with very numerous gland-tipped setæ, aciculi, and a few unequal subulate declining prickles from long bases. Sepals lanceolate-acuminate, reflexed from the fruit.

In open woods. Apparently rare, but occurring from Hants and Somerset to Carnarvon and Leicester.

England. Shrub. Summer.

A large state of this plant is the *R. Babingtonii*, *Bell Salter*.

Rough Bramble.

SUB-SPECIES XXVI.—*Rubus rudis*. *Weihe*.

Bab. Man. Brit. Bot. ed. v. p. 105.

Barren stem arching, angular, sparingly pilose; prickles numerous, nearly equal, strong, straight or slightly hooked, somewhat spreading or slightly declining from a rather small compressed base; aciculi and setæ rather few and short. Leaves of the barren stem quinate; leaflets sub-coriaceous, green and roughened with small points above, greenish-white-felted beneath with longer hairs amongst the felt on the veins, doubly and irregularly dentate-serrate or slightly lobed-serrate; terminal leaflet roundish-oval, oval, or rhomboidal-oval, rounded or sub-cordate at the base, longly acuminate or acuminate-cuspidate. Flowers in a long leafy panicle, with the upper branches spreading and corymbose, the lower ones ascending and sub-racemose; rachis and pedicels felted, stiffly-hairy, with rather numerous unequal gland-tipped setæ, and unequal declining or deflexed prickles from long bases. Sepals ovate-cuspidate.

In hedges and thickets. Common, and generally distributed.

England, Scotland, Ireland. Shrub. Summer.

A variable form, with the leaflets often much cut, the felt beneath varying from green to nearly white. The Rev. A. Bloxam finds a curious small-leaved variety, *microphyllus*, with the terminal leaflet rhomboid-ovate, cuspidate, finely and acutely doubly serrate.

Coarse Bramble.

SUB-SPECIES XXVII.—*Rubus Radula*. *Weihe*.

PLATE CCCCLII.

Bab. Man. Brit. Bot. ed. v. p. 105.

Barren stem arching-angular, sparingly hairy; prickles unequal, rather slender, declining, from a rather short compressed base; aciculi and gland-tipped setæ rather numerous, short, unequal. Leaves of the barren stem quinate; leaflets rather thin, green above, sparingly pilose greenish-white-felted beneath, with a few longer hairs on the veins, finely and doubly dentate; terminal leaflet oval, obovate-oval, or oblong-obovate, rounded or sub-cordate at the base, abruptly acuminate or cuspidate. Flowers in a long narrow leafy panicle with short spreading corymbose branches; rachis and pedicels felted, stiffly-hairy, with numerous short unequal gland-tipped setæ, aciculi, and spreading or declining subulate prickles from long bases. Sepals ovate cuspidate, loosely reflexed from the fruit.

α, R. Radula. Weihe.

Prickles on the barren stem unequal, terminal leaflet oval or obovate, doubly dentate-serrate, acuminate.

β, Leightonii. Lees.

Prickles on the barren stem nearly equal. Terminal leaflet oval or obovate, cuspidate, sharply and doubly dentate-serrate.

γ, denticulatus. R. apiculatus. Weihe?

Prickles on the barren stem unequal, with a few aciculi and gland-tipped setæ, and occasionally a few scattered hairs. Terminal leaflet broadly oval-oblong, cordate, abruptly cuspidate, finely and irregularly denticulate; rachis and pedicels densely felted, sparingly bristly-hairy, with numerous gland-tipped setæ and aciculi passing gradually into prickles.

In hedges and woods. *α* and *β* common. *γ* rare; near Sheffield, whence I am favoured with specimens by the Rev. W. W. Newbould, and where it has also been found by Mr. Bloxam.

England, Scotland, Ireland. Shrub. Summer.

A large coarse plant varying in the colour of the felt on the underside of the leaves from white to green, according to the degree of exposure to the sun. The plant placed as *γ, denticulatus*, Mr. Bloxam considers the *R. apiculatus* of continental botanists.

The vestiture of the stem and panicle is so different from that of ordinary *R. Radula*, that it cannot well be retained in its present position, irrespective of the peculiar shape of the leaflets, which have also shorter felt beneath intermixed with scarcely any longer hairs. Professor Babington, who has seen only an imperfect specimen, thinks that it seems to belong to the *Köhlerianæ* close to *R. diversifolius*; adding that *R. Radula* approaches the *Köhlerianæ*, and that probably this form is the connecting link.

File-stemmed Bramble.

GROUP IV.—GLANDULOSI. *Bab.*

Barren stem arching-prostrate or prostrate, rooting at the end, hairy; prickles numerous, usually not confined to the angles of the stem, very unequal, passing gradually into aciculi and gland-tipped setæ, which are very numerous.

SUB-GROUP I.—KÖHLERIANI. *Bab.*

Leaves mostly quinate; prickles very numerous, scattered.

SUB-SPECIES XXVIII.—*Rubus Köhleri.* *Weihe.*

PLATE CCCCLIII.

Bab. Man. Brit. Bot. ed. v. p. 105.

Barren stem arching-prostrate, roundish or bluntly angular, pilose; prickles very unequal, strong, spreading or slightly deflexed, from an elongate compressed base; aciculi and gland-tipped setæ numerous and very unequal. Leaves of the barren stem quinate; leaflets rather thin, smooth above, paler and hairy only on the veins or more rarely felted beneath, finely acutely and irregularly dentate-serrate; terminal leaflet oval, sub-cordate or rounded at the base, acuminate; basal leaflets stalked, not imbricated. Flowers in a long narrow leafy often interrupted panicle with very short ascending-spreading corymbose branches; rachis and pedicels sparingly stiffly-hairy with numerous gland-tipped setæ, aciculi, and very unequal subulate slightly deflexed prickles. Sepals ovate-acuminate, reflexed in fruit.

α, R. Köhleri. *Weihe.*

Barren stem with very numerous prickles, aciculi, and gland-tipped setæ. Leaflets rough, hairy only on the veins beneath; panicle lax, truncate, with the terminal peduncles shorter than the lateral ones.

β, infestus. Bab.

Barren stem with very numerous prickles, aciculi, and gland-tipped setæ. Leaflets soft, hairy only on the veins beneath; panicle broad, compact, the terminal peduncles shorter than the lateral ones.

γ, R. pallidus. Weihe.

Barren stem with rather few prickles, aciculi, and gland-tipped setæ. Leaflets soft, greyish, felted beneath, as well as hairy on the veins; panicle narrow, rounded at the top, with the terminal peduncles frequently as long as or longer than the lateral ones.

In hedges and thickets. Common, and generally distributed. The form *R. pallidus* apparently the most abundant.

England, Scotland, Ireland. Shrub. Summer.

A very prickly plant. Var. *γ* has a different aspect, from the fewer prickles and leaflets felted beneath.

*Köhler's Bramble.*SUB-SPECIES XXIX.—*Rubus fusco-ater.* Weihe.

Bab. Man. Brit. Bot. ed. v. p. 106.

Barren stem arching-prostrate, angular, hairy; prickles unequal, slightly deflexed, from a very large compressed base; aciculi and gland-tipped setæ numerous, unequal. Leaflets irregularly or doubly dentate-serrate, even above, green and hairy beneath; terminal leaflet roundish ovate, sub-cordate, acuminate or acuminate-cuspidate; basal leaflets stalked, imbricated so as to overlap the intermediate ones. Flowers in a long leafy sub-pyramidal panicle, with short ascending-spreading corymbose branches, or with the lower ones longer and sub-racemose; rachis and pedicels bristly-hairy, with numerous unequal gland-tipped setæ, aciculi, and slightly declining prickles. Sepals ovate-acuminate, spreading or adpressed to the fruit.

On heaths. Rare.

England. Shrub. Summer.

The only specimens I have seen are from Kidderminster, in Mr. Borrer's herbarium at Kew.

Brownish-black Bramble.

SUB-SPECIES XXX.—*Rubus diversifolius*. *Lindley*.

Bab. Man. Brit. Bot. ed. v. p. 106.

R. fusco-ater, *Bab. olim*.

Barren stems arching-prostrate, angular, very sparingly hairy; prickles numerous, unequal, spreading or slightly deflexed, from an elongate much compressed base; aciculi and gland-tipped setæ numerous and unequal. Leaves of the barren stem quinate; leaflets sub-coriaceous, rugose above, paler and frequently felted beneath with short setose hairs on the veins, unequally or doubly dentate-serrate; terminal leaflet broadly oval or oval-obovate, subcordate, acuminate; basal leaflets sub-sessile, imbricated, overlapping the intermediate ones.

In hedges. Not uncommon, and pretty generally distributed in England.

England. Shrub. Summer.

Judging from the two specimens in Mr. Borrer's herbarium, which Professor Babington now considers as *R. fusco-ater*, there appears to me little difference between this and the preceding, but I have no other acquaintance with the plant.

Various-leaved Bramble.

SUB-SPECIES XXXI.—*Rubus Lejeunii*. *Weihe & Nees*.

Bab. Man. Brit. Bot. ed. v. p. 106.

Barren stem arching - prostrate, bluntly angular, rather sparingly hairy; prickles few, unequal, mostly small, declining, from an elongate compressed base; aciculi very short, gland-tipped setæ rather few, unequal. Leaves pedate-quinate; leaflets thin, opaque and sparingly pilose above, paler and abundantly hairy on the veins beneath, unequally or doubly dentate-serrate; terminal leaflet oval, subcordate-acuminate or acuminate-cuspidate; basal leaflets stalked, not imbricated. Flowers in a broad lax leafy panicle, with the upper branches rather short, corymbose, spreading at right angles to the rachis, the lower ones ascending-spreading; rachis and pedicels felted with numerous short gland-tipped setæ a few aciculi and small slightly declining prickles. Sepals ovate lanceolate, reflexed.

In hedges. Rare. Occurring from Sussex to York.

England. Shrub. Summer.

This appears to have little affinity with the other *Köhleriani*, though the armature of the stem agrees best with them.

Lejeune's Bramble.

SUB-GROUP II.—BELLARDIANI. *Bab.*

Leaves mostly ternate, prickles chiefly confined to the angles of the stem, which has very numerous aciculi and gland-tipped setæ.

SUB-SPECIES XXXII.—*Rubus pyramidalis*. *Bab.*

Bab. Man. Brit. Bot. ed. v. p. 107.

Barren stem almost prostrate, roundish, sparingly hairy; prickles numerous, short, strong, deflexed, from a rather elongate compressed base; aciculi and gland-tipped setæ rather numerous, short, and nearly equal. Leaves of the barren stem mostly ternate or more rarely pedate-quinate; "leaflets convex" (*Bab.*), coriaceous, opaque, sub-glabrous above, sparingly pilose on the veins beneath, finely and irregularly denticulate-serrate; terminal leaflet oval-obovate, truncate or sub-cordate at the base, cuspidate. Flowers in a pyramidal panicle, leafless and racemose above, with the branches short, spreading-ascending and simple, the lower ones elongate racemose; rachis straight, rigid, and as well as the pedicels densely felted and stiffly-hairy, with very numerous unequal gland-tipped setæ and aciculi, and a few slender declining unequal prickles. Sepals broadly lanceolate, cuspidate, loosely adpressed to the fruit.

On the borders of woods. Rare. In the counties of Somerset, Worcester, Monmouth, and Carnarvon.

England. Shrub. Summer.

The only specimens of this form which I have seen are those sent me by the Rev. W. W. Newbould from Llanberis. They appear to be quite unlike any others of the section, from the stiff rachis of the pyramidal panicle.

Pyramidal-flowered Bramble.

SUB-SPECIES XXXIII.—*Rubus Güntheri*. *Weihe.*

Bab. Man. Brit. Bot. ed. v. p. 107.

Barren stem arching-prostrate, round, sparingly hairy; prickles rather few, very unequal, slender, hooked or declining, from a rather long, scarcely compressed base; aciculi and gland-tipped

setæ rather numerous, unequal. Leaves mostly ternate, more rarely quinate-pedate; leaflets sub-coriaceous, flat, opaque, and sparingly pilose above, paler and more hairy or slightly felted beneath, finely and irregularly dentate-serrate; terminal leaflet oval-obovate or subrhomboidal-obovate, truncate or sub-cordate at the base, acuminate-cuspidate. Flowers in a long narrow sub-racemose panicle, with the branches short spreading-ascending, simple or sub-corymbose; rachis flexuous and with the pedicels finely felted, with the felt intermixed with longer hairs, and with short unequal gland-tipped setæ, a few aciculi and slender declining prickles. Sepals ovate-lanceolate, reflexed in fruit.

In shady woods. Rare. Reported from Cornwall, Herts, Worcester, Warwick, Monmouth, and Essex.

England. Shrub. Summer.

A form well marked by the few prickles, the flexuous rachis of its narrow panicle and the narrow petals.

Günther's Bramble.

SUB-SPECIES XXXIV.—*Rubus humifusus*. *Weihe.*

Bab. Man. Brit. Bot. ed. v. p. 107.

R. hirtus, var. *a*, *Bab. olim.*

Barren stem arching-prostrate, round, stiffly-hairy; prickles numerous, very unequal, slender, spreading or slightly deflexed, from a rather long much compressed base; aciculi and gland-tipped setæ numerous and unequal. Leaves ternate or quinate-pedate; leaflets thin, green on both sides, pilose above, paler and densely pubescent or felted beneath, where they are also stiffly-hairy on the veins, very sharply and irregularly denticulate-serrate; terminal leaflet oval, rounded or sub-cordate at the base, abruptly acuminate. Flowers in a leafy panicle, often sub-racemose, with the branches spreading-ascending, the lower ones mostly corymbose; rachis and pedicels felted and densely stiffly-hairy, with very numerous unequal gland-tipped setæ, aciculi, and very slender declining prickles. Sepals lanceolate-ovate, acuminate, with gland-tipped setæ, loosely reflexed in fruit.

In woods and thickets. Rare. Reported from the counties of Herts, Kent, Worcester, Warwick, Salop, and Dumfries.

England, Scotland, Ireland. Shrub. Summer.

Stem with more numerous hairs, gland-tipped setæ, aciculi,

and slender prickles, than in the allied species; panicle rather small, frequently simple; petals broad.

Trailing Bramble.

SUB-SPECIES XXXV.—*Rubus foliosus.* *Weihe.*

Bab. Man. Brit. Bot. ed. v. p. 108.

R. hirtus, var. γ , *Bab. olim.*

Barren stem arching-prostrate, slightly angular, sparingly hairy; prickles rather numerous and slender, slightly hooked or deflexed, from a rather long much compressed base; aciculi and gland-tipped setæ few, unequal. Leaves pedate-quinate; leaflets sub-coriaceous, green on both sides, opaque and sparingly pilose above, paler and densely pubescent or felted beneath, where they are stiffly-hairy on the veins, finely irregularly denticulate-serrate; terminal leaflet roundish-ovate, cordate, cuspidate-acuminate. Flowers in a long very leafy narrow compact panicle, with short spreading-ascending branches; the upper ones simple or corymbose, the lower sub-racemose; rachis thick, slightly flexuous and as well as the pedicels very densely stiffly-hairy, the hairs intermixed with rather numerous aciculi, gland-tipped setæ, and slender spreading or declining prickles. Sepals ovate-lanceolate, acuminate, stiffly-hairy, with gland-tipped setæ and aciculi, loosely reflexed from the fruit.

On heaths and in woods. Rare, and apparently confined to Warwickshire.

England. Shrub. Summer.

Of this form, the only specimens I have seen are some kindly given me by the Rev. A. Bloxam, from Annesley coalfield Heath, near Atherstone. The panicle leafy up to the top and the very thick rachis give the plant a very peculiar aspect. Professor Babington considers it closely allied to *R. humifusus*, but the stem is much less thickly clothed with hairs, gland-tipped setæ, aciculi, and prickles.

Leafy-flowered Bramble.

SUB-SPECIES XXXVI.—*Rubus glandulosus.* *Bellard.*

PLATE CCCCLIV.

Bab. Man. Brit. Bot. ed. v. p. 108.

Barren stem arching-prostrate, nearly round, very hairy; prickles unequal, small, weak, slightly hooked or declining, from a small compressed base; gland-tipped setæ and aciculi numerous,

short, nearly equal. Leaves ternate, rarely quinate; leaflets rather thin, green on both sides, sub-glabrous above, hairy on the veins beneath, finely and unequally serrate; terminal leaflet oblong-oval, oval, or obovate-oval, sub-cordate at the base, cuspidate-acuminate. Flowers in a short rather compact leafy panicle, sub-racemose towards the apex; upper branches short, spreading, mostly simple, lower ones sub-racemose; rachis flexuous, felted, with longer rather-stiff hairs, very numerous gland-tipped setæ, aciculi, and a few slender declining prickles. Sepals ovate-triangular, with gland-tipped setæ and aciculi, spreading or loosely applied to the fruit.

α, R. Bellardi. Weihe.

Leaves mostly ternate, with the leaflets nearly equal, the lateral ones divaricate, finely and bluntly serrate, almost crenate-serrate with an apiculus to each crenature; panicle short, rachis very flexuous, and the lower branches of the panicle distant. *R. dentatus*, Blox., is a form of this, with the stem more angular, the leaflets greyish beneath, acuminate-cuspidate, sub-cordate at the base. Hairs on the whole plant shorter and less numerous than in *β*.

β, R. hirtus. Waldst. & Kit. *R. fuscus.* Lees (not Weihe).

Leaves mostly quinate, coarsely and unequally dentate-serrate; hairs longer and more numerous than in *α*. Panicle often elongated, with the rachis only slightly flexuous. *R. rotundifolius*, Blox., has the stem slightly angular, the leaves often ternate, the leaflets much broader, less sharply serrate and sub-cuspidate.

In woods and hedges. Not common, the form *R. hirtus* being apparently the most abundant.

England, Ireland. Shrub. Summer.

The typical forms *Bellardi* and *hirtus* or *fuscus*, are so different that they could scarcely be combined, were it not for the intermediates which link them together.

Glandular-stemmed Bramble.

GROUP V.—CÆSII. *Bab.*

Barren stem arching-prostrate or prostrate, roundish or obtusely angled, generally with a glaucous bloom; prickles unequal aciculi and gland-tipped setæ few or none.

SUB-SPECIES XXXVII.—*Rubus Balfourianus*. *Blox.*

Bab. Man. Brit. Bot. ed. v. p. 108.

Barren stem arching-prostrate, round, sparingly hairy; prickles few, unequal, slender, straight, spreading, from a rather short slightly compressed base. Leaves of the barren stem mostly quinate; leaflets thin, green on both sides, rugose and sparingly pilose above, pubescent but not felted beneath, finely and irregularly dentate-serrate; terminal leaflet rhomboidal-ovate, rounded or sub-cordate at the base, shortly acuminate or cuspidate-acuminate; lateral leaflets sub-sessile, imbricated. Flowers in a lax leafy sub-corymbose panicle, the upper branches short and nearly simple, the lower longer and corymbose or racemo-corymbose; rachis and pedicels felted, with long woolly hairs intermixed, and numerous short unequal gland-tipped setæ, a few aciculi, and small slender slightly declining prickles. Sepals ovate-acuminate, with gland-tipped setæ, erect-spreading. Styles pale flesh-coloured.

In hedges. Probably not uncommon, as it occurs from Hants to York.

England, Ireland. Shrub. Summer.

A very variable form, approaching in some of its states to *R. corylifolius*, in others to *R. cæsius*, but generally a very luxuriant plant, with large leaves, paler beneath. Petals pale pink; fruit of rather numerous drupes.

Balfour's Bramble.

SUB-SPECIES XXXVIII.—*Rubus corylifolius*. *Sm.*

PLATE CCCCLV.

Bab. Man. Brit. Bot. ed. v. p. 109.

Barren stem arching-prostrate, round or bluntly angular, nearly glabrous, slightly glaucous; prickles rather few, short, straight, spreading or slightly declining, from a rather short slightly-compressed base. Leaves of the barren stem mostly quinate, if ternate, with the lateral leaflets 2-partite or -cleft; leaflets thin, green on both sides, rugose and sparingly pilose above, paler and densely pubescent or felted beneath, acutely and irregularly or doubly dentate-serrate; terminal leaflet roundish-ovate, sub-cordate at the base, abruptly acuminate; lateral leaflets sub-sessile, imbricated. Flowers in a lax rather short panicle, sub-corymbose at the apex, where the

branches are somewhat spreading; lower branches frequently remote, elongated, and corymbose; rachis and pedicels finely felted or pubescent, with short hairs and a few gland-tipped setæ, usually confined to the uppermost branches; prickles few, unequal, slender, subulate. Sepals ovate, abruptly acuminate, mostly without gland-tipped setæ, reflexed from the fruit, which is black.

α, R. sublustris. Lees.

Barren stem nearly round, green, tinged with red; prickles slender, mostly spreading, from a short base; leaflets felted, greyish-green beneath. Rachis nearly straight, with few prickles.

β, conjungens. Bab. R. Wahlbergii. Bell Salt.

Stem round at the base, angular above, green tinged with red; prickles strong, slender, somewhat spreading, from a rather long base. Leaflets densely pubescent or ashy-felted beneath. Rachis nearly straight, with few prickles.

γ, purpureus. Bab. R. Wahlbergii. Arrh.

Stem angular, purple, often slightly hairy; prickles strong, spreading or slightly deflexed, from a rather long base. Leaflets pubescent or white-felted beneath. Rachis slightly flexuous, with numerous rather strong prickles.

In hedges and thickets. Very common, and generally distributed.

England, Scotland, Ireland. Shrub. Summer.

A large plant, varying considerably, but having a peculiar look, which, though difficult to describe, when once known is easily recognized. This sub-species flowers earlier than most of the Rubi, except *R. cæsius*. The flowers are large, white or pink.

Hazel-leaved Bramble.

SUB-SPECIES XXXIX.—*Rubus althæifolius. Hort.*

Bab. Man. Brit. Bot. ed. v. p. 109, & Fl. Camb. p. 305.

R. Wahlbergii β glabratus, Bell Salt., in Bot. Gaz. Vol. II. p. 129.

Barren stem prostrate, roundish, with scattered hairs; prickles numerous, unequal, slender, straight or slightly hooked, from a rather short compressed base; gland-tipped setæ few. Leaves of the barren stem ternate, with the lateral leaflets of the lower leaves retrorsely 2-partite, rarely quinate; leaflets thin, green on

both sides, uneven, and with a few scattered hairs above, and more numerous ones or greyish-green felt beneath, doubly serrate; terminal leaflet rhomboidal-oval or obovate-oval, rounded at the base, acute or slightly acuminate; basal leaflets of the quinate leaves not overlapping the intermediate pair, nor the lateral pair the terminal one. Flowers in a small lax leafy panicle, with the upper branches short corymbose, the lower ones longer; rachis and pedicels felted with very short hairs, with a very few short setæ and slender spreading or declining prickles. Sepals ovate-acuminate, with a few short gland-tipped setæ, loosely applied to the fruit, which is black and composed of few drupes.

In hedges. Apparently rare, being only reported from Hants, Middlesex, Cambridge, and York.

England. Shrub. Summer.

Of this plant I have only seen two or three imperfect dried specimens.

Mallow-leaved Bramble.

SUB-SPECIES XL.—*Rubus tuberculatus.* *Bab.*

Bab. Man. Brit. Bot. ed. v. p. 110, & Fl. Camb. p. 306.

R. nemorosus δ *ferox*, "*Leighton*," *Bab. olim.*

R. dumetorum "*Blox*," *Bab.*

Barren stem arching-prostrate, with rounded angles, sparingly hairy; prickles very numerous, unequal, short, slender, spreading, from a short slightly-compressed base; aciculi and setæ rather numerous, unequal. Leaves of the barren stem quinate, or ternate with the lateral leaflets 2-partite; leaflets sub-coriaceous, green on both sides, uneven, with a few short scattered hairs above, and more numerous ones beneath, irregularly dentate-serrate; terminal leaflet roundish or roundish-ovate, sub-cordate, cuspidate or acuminate-cuspidate; basal leaflets of the quinate leaves not overlapping the intermediate ones. Flowers in an elongate narrow leafy panicle, the upper branches very short, corymbose, the lower longer and sub-racemose. Rachis felted with short hairs, with very numerous unequal gland-tipped setæ, aciculi, and very numerous slender slightly-declining prickles. Sepals ovate-acuminate, with aciculi and gland-tipped setæ, loosely adpressed to the fruit, which is black and composed of few drupes.

In hedges. Probably not uncommon.

England, Ireland.

A very prickly plant, with more numerous gland-tipped setæ than the other *Rubi cæsii*. Professor Babington states that the prickles of *R. tuberculatus* are from an oblong tuberculiform or oval cushion-shaped base; while in *R. althæifolius* they are from an oblong compressed base; and he also states that the foliage of the latter has a pale glaucous tint not found in the latter. In both forms the larger prickles have proportionately longer bases than the smaller ones. Both occur with ternate leaves and have the leaflets on the barren stem generally hairy only on the veins, while the ternate leaves of the flowering-shoot seem to be always felted beneath. Professor Babington has not stated in the fifth edition of the Manual what he now considers α , β , γ of his former *R. nemorosus*.

Tubercular Bramble.

SUB-SPECIES XLI.—*Rubus cæsius*. *Linna.*

PLATE CCCCLVI.

Bab. Man. Brit. Bot. ed. v.

Barren stem prostrate, glaucous, sub-glabrous or sparingly hairy; prickles numerous, very small, unequal, weak, deflexed, rather long, from a compressed base; aciculi and setæ few. Leaves ternate, with the lateral leaflets entire, or more rarely 2-cleft, or rarely pinnate, from the terminal leaflet being divided into 3; leaflets thin, green on both sides, uneven above, paler and more or less hairy or even slightly felted beneath, often lobed, doubly or unequally serrate; terminal leaflet ovate or rhomboidal-ovate, sometimes 3-lobed; lateral leaflets not overlapping the terminal one. Flowers in a nearly simple often small and sub-corymbose panicle, with the pedicels usually rather long. Rachis and peduncles thinly felted with short hairs, and more or less numerous aciculi, setæ, and slender declining prickles. Sepals ovate-lanceolate, with aciculi and gland-tipped setæ, applied to the fruit, which is covered with a glaucous bloom, and is composed of a few large drupes.

“ α , agrestis.

R. cæsius, α *aquaticus* and β *agrestis*, *W. & N. Rubi Germ. Pl. XLVI. A.*

“Stem very slender; prickles few, small. Leaflets flat, lobate-serrate, rather pilose on both sides; terminal leaflet rhomboidal-ovate, acuminate, rounded below. Panicle often nearly simple, or its branches rarely more than once divided, but often very long.

“ β , *R. tenuis*. Bell Salt.

“Stem very slender; prickles many, strong, but small, nearly equal, deflexed. Leaflets flat? doubly serrate, pilose on both sides, or villose beneath; terminal leaflet obovate or cordate-obovate, acuminate. Fruit black, ‘not glaucous.’

“ γ , *ulmifolius*. Bab.

R. cæsius, var. β *pseudo-cæsius*, *W. & N. Rubi Germ.* Pl. XLVI. R.

“Stem slender, purplish; prickles many, small, deflexed, or declining; aciculi, setæ, and hairs few, short. Leaflets rather rugose, lobate-serrate, pilose only on the veins, or hairy, or slightly ashy-felted beneath; *terminal leaflet* round or cordate, acuminate, often 3-lobed or rarely divided into 3 sessile leaflets, of which the terminal one is narrowed below. Often much larger than Var. α or β . Stem thicker; leaves very broad.

“ δ , *intermedius*. Bab.

“Stem thicker, greenish-purple; prickles many, slender, very unequal, sub-patent; aciculi and setæ few, strong, very short. Leaflets lobate-serrate, pilose on the veins beneath; *terminal leaflet triangular cordate*, acuminate, 3-lobed or 3-partite, or divided into 3 sessile leaflets, of which the terminal is narrowed to the base.

“ ϵ , *R. pseudo-Idæus*. Lejeune.

“Stem thick, green, slightly glaucous; prickles slender, violet-coloured, sub-patent; aciculi and setæ few, very short. Leaves ternate or *quinate-pinnate*; leaflets doubly serrate, ashy-felted beneath; lateral leaflets all sessile; terminal leaflets stalked, roundly-cordate. I have only seen one specimen of this variety, found at Hunsdon, Herts.

“ ζ , *hispidus*. Bab.

“Stem slender, green; prickles short, many, subulate, unequal; setæ many, short, rigid. Leaves ternate; leaflets lobate-serrate, pilose on the veins beneath; lateral leaflets with a large backward lobe; terminal leaflets obovate-acuminate, sub-cordate below; pedicels and sepals very setose, felted, scarcely hairy.”—(Bab. Man. ed. v.)

Hedges, roadsides, waste places, and thickets. Very common, and generally distributed.

England, Scotland, Ireland. Shrub. Early Summer.

The smallest and earliest flowering of the fruticose brambles. Very variable. I am, however, unable to distribute the specimens I have seen into the varieties given by Professor Babington, so I have been obliged to copy his descriptions of them.

Dewberry.

French, *Ronce Bleuâtre.* German, *Kratzbeere.*

The fruit of the Dewberry is very superior to that of any other species. It is larger and finer, and of a bluish colour; and we may believe that in Shakespeare's time it was esteemed as a rural delicacy fit for the favourite of the queen of fairies to feed upon. Titania, in her fit of infatuation for Bottom, says:—

“Be kind and courteous to this gentleman;
Hop in his walks, and gambol in his eyes;
Feed him with apricocks and dewberries,
With purple grapes, green figs, and mulberries.”

SUB-TRIBE III.—EU-DRYADEÆ.

Calyx flattish, campanulate, or turbinate. Segments valvate in æstivation. Ovules attached by the point which is furthest from the base of the style. Styles terminal, elongated, generally persistent and plumose after flowering. Achenes dry, numerous, inserted on a dry receptacle. Seed solitary.

GENUS X.—**GEUM.** *Linn.*

Calyx flattish, or slightly concave at the base, with 10, rarely 5 segments; segments in 2 rows, the 5 outer ones smaller than the 5 inner. Petals 5, obovate, emarginate or obtuse. Stamens numerous. Receptacle conical or cylindrical, dry. Achenes dry, terminated by the elongated, more or less hairy styles, which are frequently jointed and bent above the middle, with the terminal portion deciduous.

Perennial herbs, with pinnate leaves, the terminal segment usually the largest. Flowers in irregular terminal cymes, yellow-brownish, white, or red.

The origin of the name of this genus of plants appears to be in the word *γεῦω* (*geuo*), I give a relish, in allusion to the roots of *G. urbanum*.

SPECIES I.—**GEUM URBANUM.** *Linn.*

PLATE CCCCLVII.

Radical leaves stalked, irregularly lyrate-pinnate, with 2 to 4 pairs of leaflets, and a large terminal one, which, as well as those of the

uppermost pair, is much larger than the others; stem-leaves ternate or 3-lobed, with very large foliaceous stipules which are broader than the lateral leaflets. Flowers erect. Calyx-segments reflexed after flowering. Petals spreading, oblong-obovate, rounded at the apex. Fruit-receptacle sessile. Achenes with the lower part of the tail falcate-spreading, glabrous; the part above the articulation about one-fourth the length of the lower, and glabrous, sometimes with a few hairs near the base, deciduous.

In hedgebanks, borders of woods. Common, and generally distributed, though more scarce in the North of Scotland.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Rootstock short, terminating in a tuft of leaves 4 inches to 1 foot long. The radical leaf may perhaps be best described as a ternate leaf, with oval or roundish slightly-lobed and bluntly-toothed leaflets, with a few very much smaller leaflets placed on the petiole beneath it. Stems erect or ascending, 8 inches to 3 feet high, with shortly-stalked ternate leaves, with rhomboidal-obovate slightly-lobed and bluntly-serrated leaflets. Stipules reniform-roundish, with acute triangular lobes and teeth. Flowers few, in long rather rigid peduncles, yellow, $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter. Calyx with the inner segments triangular acuminate, the outer ones half as long and strapshaped-lanceolate. Petals about as long as the sepals. Receptacle hispid. Achenes ovoid, compressed, sparingly hispid, contracted into a falcate beak about $\frac{1}{2}$ inch long, sharply hooked round, about one-fifth from the apex, where the appendage commences; the latter is also hooked at the base, but with its hook enclosed in that of the lower portion, and soon deciduous. Plant green, with short scattered hairs. Leaves thin and flaccid.

Wood Avens.

French, *Benoite Commune*. German, *Gemeine Nelkenwurz*.

The common Avens or Herb Bennett is abundant in most woods, thickets, and shady hedge-banks. The latter name is derived from *Herba benedicta*, "blessed herb." Platearius tells us "that where the root is in a house the devil can do nothing, and flies from it; wherefore it is blessed above all other herbs." He adds, that if a man carries this root about him, no venomous beast can harm him. The author of the "Ortus" says further, that where it is growing in the garden no venomous beast will approach within scent of it. It is slightly astringent and aromatic. The roots dug up in the spring are used in some parts of England to put into beer to give it an aromatic flavour, and prevent it from turning sour. Steeped in wine, the same part of the plant has been considered useful in dysentery. The active properties of the plant differ according to the situation in which it grows: when procured from a damp shady place, it is often found to be quite inert. Haller tells us that the root infused in water has occasioned delirium in some cases of fever. Gerard extols the virtues of this plant, and says: "The decoction of Avens made in wine is commended against crudities or rawnesses of

the stomache, paine of the collicke, and the biting of venomous beasts." From the aromatic nature of the roots, resembling in some measure cloves, the plant is called by some writers *Caryophyllata*.

SPECIES (?) II.—**GEUM INTERMEDIUM.** *Ehrh.*

PLATE CCCCLVIII.

G. urbano-rivale, "*G. Meyer*." *Gärcke*, Fl. v. N. & M. Deutschl. ed. vi. p. 117.

Radical leaves stalked, irregularly lyrate-pinnate, with 2 to 4 pairs of leaflets, and a terminal one, which, as well as those of uppermost pair, is much larger than the others; stem-leaves ternate or 3-lobed, with large foliaceous stipules which scarcely exceed the breadth of the lateral leaflets. Flowers drooping. Calyx-segments adpressed to the receptacle after flowering. Petals sub-erect, roundish-obovate, retuse at the apex, narrowed into a wedge-shaped claw. Fruit-receptacle sessile or sub-sessile. Achenes with the basal part of tail ascending-spreading, glabrous; the part above the articulation about one-third the length of the lower, plumose from the base to the middle, glabrous at the apex, deciduous.

In moist woods. Not uncommon in the North of England and Scotland; more rare in the South, where, however, it has occurred in the counties of Essex, Cambridge, Hants, and South Wales.

England, Scotland, Ireland. Perennial. Early Summer.

This plant is readily distinguished from *G. urbanum* by the drooping flowers, and the calyx-segments not reflexed after flowering, generally tinged with red; the petals deeper yellow, broader at the apex, and more suddenly contracted into the claw. The tails of the achenes are more slender, more erect, with the apical joint distinctly plumose at the base, and longer in proportion. The pedicels are also longer, less rigid and more erect, except at the apex. The rootstock is longer. The stipules of the stem-leaves are considerably smaller in proportion, but deeply toothed as in *G. urbanum*. It is indeed quite intermediate in appearance between that and the following species, between which it may be a hybrid. The late Dr. Bell Salter obtained a hybrid *Geum* by fertilizing the stigmas of *G. rivale* by the pollen of *G. urbanum*, and obtained an intermediate form, which he states as quite identical with the wild *G. intermedium*. The seeds of this hybrid he found to be fertile. — (Phyt. Ser. 1, Vol. IV. p. 737.) I have often found *G. intermedium* growing with *G. rivale*, but seldom with *G. urbanum*.

Intermediate Avens.

French, *Benoîte Intermédiaire*. German, *Mittleres Nelkenwurz*.

SPECIES III.—**GEUM RIVALE.** *Linn.*

PLATE CCCCLIX.

Radical leaves stalked, irregularly lyrate-pinnate, with 2 to 4 pairs of leaflets, and a terminal one which is often 3-lobed, and which, as well as those of the uppermost pair or two pairs, is much larger than the others; stem-leaves ternate or 3-lobed, more rarely with a small pair of pinnæ besides, with small foliaceous stipules, which are generally much less than the lateral leaflets. Flowers drooping. Calyx-segments adpressed to the receptacle after flowering. Petals sub-erect, obovate, with a transverse retuse limb, abruptly contracted into a long narrowly wedge-shaped claw. Fruit-receptacle on a stalk about as long as the calyx-segments. Achenes with the basal part of the tail spreading, glabrous, the part above the articulation nearly half the length of the lower, plumose from the base to within one quarter of the distance to the apex, deciduous.

In moist woods, and by the sides of streams and ditches. Common, and generally distributed in the North, but more sparingly so in the South of England, where it appears to be absent from Cornwall, Kent, Surrey, and a few other counties.

England, Scotland, Ireland. Perennial. Early Summer.

This plant resembles the two last, but is generally stouter, with thicker leaves, and with the pinnæ less unequal in size. The flowers larger, dull brownish-orange, streaked and tinged with pale lurid-purple, with the lamina much broader than in either, the calyx-segments more erect, dull-purple, the stipules much smaller; but the most remarkable difference results from the presence of a stalk which raises the receptacle until, by the time the fruit is ripe, it is completely clear of the calyx; this stalk, as well as the carpels and receptacle, is hispid. Leaves deep-green. Plant sparingly hairy, densely so on the pedicels and calyx-segments.

Water Avena.

French, *Benoite des Ruisseaux.* German, *Bach Nelkenwurz.*

This is an elegant and beautiful plant, and possesses the same properties as the Herb Bennett. In North America it is esteemed as a febrifuge and tonic. It was often used in olden times to flavour ale and other liquors. The root is the most active part of the plant.

GENUS XI.—DRYAS. Linn.

Calyx flattish or slightly concave at the base, 8- to 10-partite. Segments nearly equal and in a single row. Petals 8 or 9, more rarely fewer, oval or oblong, entire. Stamens numerous. Receptacle flattish or concave, dry. Achenes dry, terminated by the elongated very plumose styles, which are neither jointed nor bent.

Undershrubs with decumbent branches, and simple ovate-oblong or elliptical crenate or entire leaves, white beneath. Flowers large, solitary, white or yellow. Styles with white hairs.

The name of this genus of plants was given to it by Linnæus, from the dryads or nymphs of the oak, in consequence of the leaves bearing some resemblance to those of the oak.

SPECIES I.—DRYAS OCTOPETALA. Linn.

PLATE CCCCLX.

Leaves oblong-ovate, truncate at the base, crenate-lobed, hoary white beneath, with the mid-rib prominent and not white. Sepals strapshaped or oblong. Petals white.

Var. *α, genuina.*

Sepals strapshaped, sub-acute.

Var. *β, depressa.*

D. depressa, Bab. Ann. Nat. Hist. Ser. 1, Vol. X. p. 183.

Sepals oblong, blunt and rounded at the apex.

On rocks and stony debris on mountains, particularly partial to limestone. Var. *α* in Wales, the North of England, and Scotland, extending to Hoy Hill, in Orkney; and in Clare, Galway, and the North of Ireland. Var. *β* on Ben Bulbin, county Sligo.

England, Scotland, Ireland. Shrub. Summer.

A small prostrate much-branched shrub, with dark-brown bark peeling off from the old branches. Leaves stalked; lamina $\frac{1}{2}$ to 1 inch long, abrupt and occasionally sub-cordate at the base, blunt at the apex, with 5 to 8 large blunt teeth or small lobes on each side, extreme margins reflexed; midrib more or less pilose, and frequently clothed with small fringed scales. Stipules scarious, adnate for two-thirds of their length, the free portion lanceolate, ciliated with woolly hairs. Peduncles terminal, 1 to 3 inches high in flower, in fruit lengthening to 2 to 5 inches. Flowers 1 to $1\frac{3}{4}$ inch in diameter, white. Calyx-segments generally 8, reddish,

clothed with dark purple or black gland-tipped hairs intermixed with white woolly ones, which are most abundant on the margins. Petals usually 8 in number, longer than the calyx, oblong-elliptical or oval. Achenes oblong, convex on the outer side, pointed, hispid, terminating in a long tail from 1 to 2 inches long, which is plumose with long white spreading hairs. Leaves rugose, deep-green, shining above, pure white beneath (except on the veins) from a dense felt of white hairs. Petioles and under side of the veins with woolly hairs. Peduncles with white woolly hairs and stouter reddish purple gland-tipped ones, similar to those on the sepals, but less numerous.

Var. β I have not seen. The calyx in the common plant is quite as often flat and truncate as not, so that character is of no importance: Professor Babington now considers it a variety of *D. octopitala*.

Mountain Avens.

French, *Dryade à huit Pétales*. German, *Achtblüttrige Dryade*.

TRIBE IV.—ROSIDÆ.

Prickly shrubs with regularly pinnate leaves, with a few pairs of pinnæ, very rarely none. Calyx-tube urceolate-ovoid or subglobose; segments sometimes deciduous in fruit. Petals large, generally pink, red, or white, more rarely yellow. Stamens indefinite. Carpels numerous, in several whorls, arranged on the concave disk which lines the tube of the calyx. Styles lateral. Fruit consisting of dry achenes enclosed in the tube of the calyx,* which becomes fleshy at maturity and gives it the appearance of an inferior fruit.

GENUS XII.—ROSA. *Tournef.*

Calyx with an urceolate or subglobose tube (the excavated apex of the peduncle?) contracted at the mouth by a fleshy ring; segments 5, rarely 4, herbaceous, frequently pinnatifid, persistent or deciduous. Petals as many as the calyx-segments, inserted into the throat of the calyx. Stamens numerous, inserted with the petals. Ovaries included in the calyx-tube; ovules solitary, pendulous; styles lateral, coming through an aperture in the centre of the disk which closes the mouth of the calyx-tube. Achenes

* Although the fleshy sac which encloses the carpels is usually called the tube of the calyx, it is quite probable that it really consists of the excavated apex of the peduncle or thalamus.

numerous, enclosed in the fleshy or cartilaginous calyx-tube, bony, hairy at the side opposite the style.

Shrubs, often prickly. Leaves pinnate, with few pairs of pinnae : stipules adnate to the petiole. Flowers large, terminal, solitary or several in a simple corymbose or umbellate cyme.*

The name of this well-known genus of plants is one which is adopted into most modern languages of Europe. It evidently comes from the Greek word *ῥοδον* (*rodon*), red ; and the rose of the ancients was undoubtedly one of a deep crimson colour, which probably suggested the fable of its springing from the blood of Adonis.

SECTION I.—SPINOSISSIMÆ.

Rather low bushes, plentifully stoloniferous, with erect or slightly arching stems, with the branches mostly short ; shoots with the prickles very numerous, crowded, unequal, passing gradually into aciculi, and having a greater or less number of gland-tipped setæ. Leaves glabrous or slightly hairy, with few or no glands. Styles not united. Fruit mostly subglobose, with truly persistent sepals.

SPECIES I.—*ROSA SPINOSISSIMA*. Linn.

PLATE CCCCLXI.

Baker, in *Nat.* 1864, p. 15.

Prickles much crowded, slender, nearly straight, spreading, very unequal, passing gradually into aciculi and gland-tipped setæ. Leaflets † roundish or oval, obtuse, simply and equally serrated, glabrous and without glands on both sides. Pedicels solitary and without bracts, mostly glabrous. Fruit erect, subglobose, rarely ovoid, glabrous or rarely prickly at base, purplish-black when mature,

* In this difficult genus I have followed Mr. J. G. Baker in his valuable papers on the Roses of the North of England, publishing in the "Naturalist," of which, however, the whole series is not yet in print ; but Mr. Baker has kindly furnished me with his manuscripts on the subject. I have followed his arrangement, not having paid that special attention to the genus which he has bestowed upon it ; though, had I felt justified in following my own bias, I incline towards Mr. Bentham's views of the genus. It seems to me that we have not more than five or six species or super-species of British Roses ; but combination of sub-species into super-species can be safely ventured upon only by those intimately acquainted with all the minute differences which distinguish the forms which are to be combined.

For reasons similar to those given in the note on the genus *Rubus*, it has been considered advisable to give plates of the more conspicuous forms only.

† The shape of the leaflets is described from the terminal one throughout the whole of the genus *Rosa*.

rarely red. Sepals persistent, not leaf-pointed, entire, naked on the back.

On sandy sea-shores, heaths, and hills of chalk or trap rock. Rather common, and generally distributed throughout the kingdom.

England, Scotland, Ireland. Shrub. Early Summer.

A well-marked species, with much-branched very prickly stems, 1 to 4 feet high. Leaflets rather rigid, $\frac{1}{8}$ to $\frac{3}{4}$ inch long, deep green, paler beneath; serratures deep, most of them simple, occasionally one or two of them with an accessory tooth. Flowers large for the size of the plant, $1\frac{1}{4}$ to 2 inches across, white, rarely pink. Calyx-tube subglobose, glabrous, purple on one side; segments shorter than the petals, entire, mostly erect in fruit.

A form with ovate fruit has been gathered by Mr. Robertson in Castle Eden Dean, Durham, and one with the peduncle and lower part of the fruit with prickles and gland-tipped setæ, at Brighton, by Mr. Borrer.

Common Burnet Rose.

French, *Rosier très-épineux*. German, *Steinpeterleinblättrige Rose*.

This species is also known as the Pimpernel Rose, or Scotch Rose, and is frequently cultivated in gardens. A great many varieties have been raised from it. The first double variety was found in a wild state in the neighbourhood of Perth, and from this one were produced above fifty others. All nursery-men have a large selection of this particular rose. The ripe fruit of the wild kind is a favourite with children, and is not injurious. The juice diluted with water dyes silk and muslin of a peach-colour, and mixed with alum produces a deep violet hue. The plant is much liked by French horticulturists, and they have no less than 123 distinct varieties. This was the only Rose found by Sir W. Hooker in Iceland.

SPECIES II.—ROSA RUBELLA. Sm.

PLATE CCCCLXII.

Baker, in Nat. 1864, p. 17.

Prickles few, scattered, slender, nearly straight, spreading, nearly equal; gland-tipped setæ very numerous. Leaflets roundish or oval, simply and equally serrated, glabrous and without glands on both sides. Pedicels solitary and without bracts, with numerous aciculi and gland-tipped setæ. Fruit drooping, urceolate-ovoid, with gland-tipped setæ near the base, red. Sepals persistent, slightly leaf-pointed, entire, glandular on the back.

On the sea-shore. Very rare, and probably now extinct. Found on the Durham coast by Mr. Winch.

England? Shrub. Early Summer.

Of this plant I have seen no specimens, but Mr. Baker has examined those in Mr. Winch's collection at Newcastle, and considers them quite distinct from *R. spinosissima*, receding from it in the direction of *R. alpina*. Similar plants are found on the Swiss Alps, which are considered by M. Reuter as hybrids between these two species: possibly there may have been some mistake about the locality of Mr. Winch's specimens; as all the other British specimens supposed to belong to *R. rubella* belong to *R. spinosissima*.

Red-fruited Burnet Rose.

SPECIES III.—**ROSA HIBERNICA.** *Sm.*

PLATE CCCCLXIII.

Baker, in *Nat.* 1864, p. 22.

Prickles scattered, rather few and slender, straight or curved, unequal, passing gradually into aciculi and few gland-tipped setæ. Leaflets oval, acutely and nearly equally serrate, glabrous on both sides, or with the principal veins hairy beneath, serratures occasionally gland-tipped. Pedicels solitary or several together, with bracts when more than one, glabrous. Fruit erect, urceolate subglobose, glabrous, red. Sepals persistent, leaf-pointed, frequently slightly pinnatifid, without gland-tipped setæ on the back.

Mr. Baker distinguishes the following forms:—

1. *Rosa eu-hibernica.* *Baker*, l. c. p. 24.

Peduncles naked. Petioles hairy. Leaves hairy beneath.

Vale of Lorton, Cumberland; near Belfast, and County Down?

2. *Rosa glabra.* *Baker*, l. c. p. 24.

Peduncles naked. Petioles and leaves hairless.

Yorkshire, Cheshire, and Surrey.

3. *Rosa cordifolia.* *Baker*, l. c. p. 24.

Peduncles with aciculi and gland-tipped setæ. Leaflets broader, more bluntly serrate, hairy beneath, those of the barren shoots subcordate at the base. Peduncles hairy.

Dale of the Coquet, Northumberland, found by Professor Oliver.

England, Ireland. Shrub. Summer.

A doubtful plant, intermediate between *R. spinosissima* and *R. Sabini*, resembling the former in the shape and serration of the leaflets, the latter in general habit, the prickles, the flowers not

truly solitary and being pale pink, also in the shape of the fruit, and the pinnate sepals. If the form *cordifolia* really belong to this species, I do not see how it can be kept distinct from *R. Sabini*; but I have only seen one specimen kindly sent by Mr. Baker, and this, but for Mr. Baker's opinion, I should have had no hesitation in referring to *Wilsoni* or *Sabini* rather than *hibernica*.

Irish Burnet Rose.

This Rose was discovered by Mr. John Templeton, in the county of Down, growing abundantly about Belfast harbour; he consequently became entitled to the reward of £50 offered by the patrons of botany at Dublin for the discovery of a new Irish plant.

SPECIES IV.—**ROSA WILSONI.** *Borrer.*

PLATE CCCCLXIV.

Baker, in *Nat.* 1864, p. 21.

Prickles usually crowded, stout, straight or slightly curved, unequal, passing gradually into aciculi and setæ, which are numerous. Leaflets oval or ovate, frequently sub-cordate at the base, rather unequally but scarcely doubly serrate, hairy on the veins and with scattered glands beneath, serratures occasionally gland-tipped. Pedicels solitary, or 2 or 3 together, with bracts when more than 1, thickly clothed with gland-tipped setæ. Fruit erect, globular contracted into a neck at the apex, with a few gland-tipped aciculi, red. Sepals persistent, leaf-pointed, entire, with gland-tipped setæ on the back.

On the banks of the Menai Straits, near Bangor.

England. Shrub. Summer.

Of this plant I have only seen dried specimens, and, judging from them, I should have called the plant a slight variety of *R. Sabini*, of which Mr. Baker is inclined to think it is a sub-species; the only difference between the two being that the leaves are less distinctly doubly serrate.

Wilson's Rose.

SPECIES V.—**ROSA SABINI.** (*Woods*), *Baker.*

PLATE CCCCLXV.

Baker, in *Nat.* 1864, p. 18.

Prickles somewhat crowded, stout, straight or slightly curved, gradually passing into numerous aciculi and setæ. Leaflets oval or ovate, sub-cordate at the base, doubly serrate, sparingly hairy above, densely so, and with scattered glands beneath, secondary serratures generally gland-tipped. Pedicels solitary or 2 or 3 together,

often with ovate bracts, usually with gland-tipped aciculi. Fruit erect, subglobose, generally with aciculi and gland-tipped aciculi, red. Sepals persistent, leaf-pointed, entire or slightly pinnatifid, with gland-tipped setæ on the back.

Mr. Baker distinguishes three forms:—

1. *Rosa coronata* (*Crepin*), including *R. Sabini* (*Woods E. B. S.* 2594), *Doniana* (*Woods, E. B. S.* 2601), and *gracilis* (*Woods, E. B.* 583,—excl. fruit).

Pedicels and calyx-tubes with aciculi and gland-tipped aciculi. Leaves with conspicuously compound teeth, hairy on both sides and more or less glandular beneath.

Frequent, and extending from Sussex and the Isle of Wight to Clova, in Forfarshire, and Braemar, in Aberdeen.

2. *Rosa involuta*. *Sm.* (*E. B.* 2068).

Pedicels and calyx-tube with aciculi and gland-tipped aciculi. Leaves imperfectly doubly serrate, nearly glabrous above, hairy on the veins, and nearly destitute of glands beneath.

In the Hebrides and West Highlands of Scotland.

3. *Rosa Robertsoni*. *Baker*.

Pedicels with aciculi and gland-tipped aciculi. Calyx-tube nearly smooth. Leaves imperfectly doubly serrate, sub-glabrous above, hairy on the veins, and sparingly glandular beneath.

In Northumberland and Yorkshire.

England, Scotland, Ireland. Shrub. Summer.

A variable plant, 2 to 6 or even 8 feet high, with the leaves more downy than in the preceding, the flowers usually larger, varying from pink to white. It has a somewhat resinous scent, from the presence of glands.

Mr. Baker is doubtless correct in considering that *R. Sabini*, *R. Doniana*, and *R. gracilis* of English authors are undistinguishable; they seem to be mere states induced by circumstances of growth. Mr. Bentham is inclined to refer *R. involuta* to *R. spinosissima*; but, judging from descriptions (not having seen specimens), Mr. Baker appears to be right in placing it under *R. Sabini*.

Sabine's Rose.

SECTION II.—VILLOSÆ.

Large bushes with sub-erect or somewhat arching stems; shoots with the prickles scattered, uniform; gland-tipped setæ often few. Leaves more or less hairy above, conspicuously so, and usually with reddish resinous glands beneath. Peduncles in a corymbose cyme, commonly with aciculi and gland-tipped aciculi. Styles not united. Fruit mostly globose, with truly persistent or sub-persistent sepals.

SPECIES VI.—*ROSA MOLLISSIMA*. *Fries.*

PLATE CCCCLXVI

Baker, in *Nat.* 1864, p. 33.

R. villosa, *Auct. Angl.*

R. mollis, *Sm. Eng. Bot.* No. 2459.

Prickles uniform, nearly straight, spreading or declining. Leaflets broadly ovate, doubly serrate, rugose, greyish-green and with a thick coating of soft white hairs above, paler more hairy and with a few glands beneath. Pedicels very short, with oval bracts, and with aciculi and gland-tipped aciculi. Fruit often nodding, sub-globose, rarely ovoid, glabrous or with gland-tipped aciculi, scarlet when ripe, which is in the end of summer or early autumn. Sepals truly persistent, leaf-pointed, entire or slightly pinnatifid, with gland-tipped aciculi on the outside.

In hedges, bushy places, and woods. Common, especially in the North, though extending in range from the Isle of Wight to Orkney.

England, Scotland, Ireland. Shrub. Summer.

A shrub 3 to 8 feet high, with rather large prickles, and soft greyish very downy leaflets, the secondary serratures gland-tipped. Flowers $1\frac{1}{2}$ to 2 inches across, varying from deep rose-colour to white. Fruit $\frac{5}{8}$ to $\frac{3}{4}$ inch in diameter, ripening nearly a month earlier than that of the other British species.

Soft-leaved Rose.

French, *Rosier velu*. German, *Weichblättrige Rose*.

SPECIES VII.—*ROSA TOMENTOSA*. *Smith.*

PLATE CCCCLXVII

Baker, in *Nat.* 1864, p. 36.

Prickles uniform, straight or curved, spreading or declining. Leaflets ovate or elliptical, doubly serrate, slightly rugose, greyish-

green and more or less thickly coated with hairs above, paler more hairy and frequently glandular beneath. Pedicels rather short, with oval bracts, and with aciculi and gland-tipped aciculi. Fruit ovoid, urceolate-ovoid or more rarely subglobose, glabrous or with gland-tipped aciculi, scarlet when ripe, which is in the middle or towards the end of autumn. Sepals sub-persistent, *i.e.* deciduous before the fruit is ripe, leaf-pointed, pinnatifid, with gland-tipped aciculi on the outside.

In hedges, bushy places, and woods. Common, but not known to extend further North in Scotland than Aberdeenshire.

England, Scotland, Ireland. Shrub. Summer.

I cannot bring myself to think that this is more than a sub-species of the preceding; the fruit ripening later and the sepals falling before winter being the only tangible points of difference between them; indeed *R. mollissima* (Fries), *R. pomifera* (Herm.), and *R. tomentosa* (Sm.), seem to be all sub-species of the Linnæan *R. villosa*. Generally speaking, *R. tomentosa* may be distinguished by its narrower and more pointed leaves, less rugose and less softly hairy than in *R. mollissima*, and also by the more elongate pedicels, longer calyx-tube and fruit, and more evidently pinnate segments. The flower varies in colour, as in the preceding species, from deep rose to white, and the fruit from smooth to slightly bristly. Mr. Baker does not consider that *R. scabriuscula* (Sm. Eng. Bot. No. 1896) and *R. subglobosa* (Sm. Eng. Fl. Vol. III. p. 384) can be distinguished even as varieties.

Downy-leaved Rose.

French, *Rosier cotonneux*. German, *Filzige Rose*.

SECTION III.—RUBIGINOSÆ.

Small or moderately large bushes, with sub-erect or arching stems. Shoots with the prickles scattered or somewhat crowded, uniform or slightly unequal, often intermixed with aciculi and a few gland-tipped setæ, but not passing gradually into these. Leaves glabrous, or slightly hairy above, hairy and with numerous viscous often fragrant glands beneath. Pedicels in a corymbose cyme, commonly with aciculi and gland-tipped aciculi. Styles not united. Fruit ovoid or roundish-pyriform, with sub-persistent or deciduous petals.

SPECIES VIII.—*ROSA RUBIGINOSA*. Linn.

PLATE CCCCLXVIII.

Baker, in Nat. 1864, p. 60.

Prickles numerous, large, curved, rather unequal, intermingled with aciculi, and occasionally a few gland-tipped setæ. Leaflets oval or roundish, doubly serrate, bright green, glabrous or subglabrous above, pale green hairy on the veins and thickly covered with sticky fragrant glands beneath. Pedicels short, with oval bracts, usually with aciculi and gland-tipped aciculi. Styles sparingly hairy. Fruit obovate-globose, rarely ovoid, scarlet when ripe. Sepals sub-persistent, leaf-pointed, usually pinnatifid, with numerous aciculi and gland-tipped setæ on the back.

In hedges, bushy places, and sandy sea-shores. Rather sparingly distributed from Cornwall, Devon, Hants, and Kent, to Aberdeen and Moray, though very probably not native in many of its stations.

England, Scotland, Ireland. Shrub. Summer.

An erect bush, from 2 to 4 feet high, with rather short compact branches. Leaflets small, somewhat shining above, very fragrant. Larger prickles sometimes $\frac{1}{2}$ inch long, and much curved, smaller ones slender and nearly straight. Flowers about $1\frac{1}{4}$ inch in diameter, rose-colour. Fruit $\frac{1}{2}$ to $\frac{5}{8}$ inch in diameter, not ripening till October, by which time the sepals have generally fallen.

A plant found by Mr. Baker at Swaledale, Yorkshire, has the calyx-tube ovoid-urceolate, and the glands on the under side of the leaves less numerous, thus showing an approach to *R. micrantha*.

Common Sweetbriar, Eglantine.

French, *Rosier à Feuilles odorantes*. German, *Weinrose*.

Who does not know the Sweetbriar of our hedges, with its pretty pink roses and bright red fruits? It is prized alike in wild bouquets, in village gardens, and in the parterres of the wealthy. Poets have sung its praises, and in spite of its thorny stems, it is gathered for its sweet-smelling leaves. It bears clipping well, and makes a good hedge; but Sir Walter Scott deprecates this practice, and says:—

“Cherish the tulip, prune the vine,
But freely let the woodbine grow,
And leave untrimm’d the eglantine.”

Burns, the poet of nature, sings of the Sweetbriar in strains which, while writing of it, we cannot but quote:—

“O bonnie was yon rosy brier,
That blooms sae far frae haunt o’ men,

And bonnie she, and ah how dear !
It shaded frae the e'enin' sun.

" Yon rose buds in the morning dew,
How pure amang the leaves sae green ;
But purer was the lover's vow
They witness'd in their shade yestreen.

" All in its rude and prickly bower,
That crimson rose how sweet and fair !
But love is far a sweeter flower,
Amid life's thorny path o' care."

Pliny mentions the briar-rose root as a cure for hydrophobia, and affirms that men derived their knowledge of it from a dream, of which he tells the story.

The Eglantine has been so long and so frequently eulogized by poets, that we could not here give half the instances that occur to us. The picture of rural beauty suggested by Sir Walter Scott seems, however, very appropriate :—

" Boon nature scatter'd free and wild
Each plant and flower, the mountain's child,
Here eglantine embalm'd the air,
Hawthorn and hazel mingled there ;
The primrose pale and violet flower,
Found in each cliff a narrow bower ;
Foxglove and nightshade side by side,
Emblems of punishment and pride,
Group'd their dark hues with every stain,
The weather-beaten crags retain."

SPECIES IX.—*ROSA MICRANTHA*. Sm.

PLATE CCCCLXIX.

Baker, in *Nat.* 1864, p. 62.

Prickles few, moderate, curved, uniform, not intermixed with aciculi and gland-tipped setæ. Leaflets oval, doubly serrate, bright green and sub-glabrous above, hairy on the veins and with scattered sticky slightly fragrant glands beneath. Pedicels short, with oval bracts and numerous gland-tipped aciculi. Styles glabrous. Fruit urceolate-ovoid, scarlet when ripe. Sepals deciduous, falling by the time the fruit is ripe, leaf-pointed, entire or slightly pinnatifid, with numerous gland-tipped setæ on the outside.

In hedges, bushy places. Not uncommon in the South, but apparently not reaching Scotland.

England, Ireland. Shrub. Summer.

A large straggling plant, often 6 or 8 feet high, with arching stems having fewer and smaller prickles than *R. rubiginosa* ; leaflets

thinner in texture with fewer glands beneath and a much fainter scent; flowers smaller, about 1 inch across, pale rose-colour, calyx-tube oblong-ovoid. Fruit regularly ovoid, contracted into a short neck at the top.

This plant appears to be truly distinct from *R. rubiginosa*, receding in the direction of *R. canina*, which it resembles in its mode of growth.

Small-flowered Sweetbriar.

SPECIES X.—**ROSA SEPIUM.** "*Thuil.*" Lindley.

PLATE CCCCLXX.

Baker, in Nat. 1864, p. 67.

Prickles numerous, large, curved, rather unequal, intermingled with aciculi and occasionally a few gland-tipped setæ. Leaflets oval or elliptical, doubly serrate, dark green and slightly hairy above, paler hairy and with numerous slightly fragrant glands beneath. Pedicels short, with oval bracts and a few gland-tipped aciculi. Styles hairy. Fruit narrowly urceolate-ovoid, scarlet when ripe. "Sepals persistent" (Borrer), leaf-pointed, entire or sub-pinnatifid, "hairy on the outside, and fringed with gland-tipped teeth" (Borrer).

At Bridport, Warwickshire, and possibly Heyford, Oxfordshire.

England. Shrub. Summer.

Of this plant I have only seen the specimens in Mr. Borrer's herbarium at Kew, which are very imperfect. Mr. Baker has not seen any specimens of the British plant. It appears more nearly allied to *R. rubiginosa* in size, mode of growth, and armature of stem than to any of the other British species: but the dried specimens in Mr. Borrer's herbarium are very similar to those of *R. micrantha* in habit, so that it might be very readily passed over as that species.

Small-leaved Sweetbriar.

French, *Rose des Haies* German, *Zaun Rose*.

SPECIES XI.—**ROSA CRYPTOPODA.** *Baker.*

Baker, in Nat. 1864, p. 66.

"Prickles somewhat unequal, the larger ones uncinate and moderately robust below. Leaves 3 to $3\frac{1}{2}$ inches from the base to the terminal leaflet, which is oval or elliptical, either rounded or somewhat narrowed toward the base, and measures rather more than 1 inch long by $\frac{3}{4}$ inch wide. Leaflets greyish or glaucous-green,

glabrous on the upper surface, still greyer beneath, hairy only on the midrib and principal veins, but thinly scattered all over with green viscous glands, the serratures open but not deep, each furnished with several fine gland-tipped teeth, the petioles pubescent and setose and furnished with 2 or 3 falcate aciculi. Stipules glandular on the back or even a little pubescent, the upper ones and the bracts very large, when the plant is in flower quite hiding the short peduncles, the bracts also glandular on the back but not hairy, all finely setoso-ciliated. Peduncles very short and quite naked. Calyx-tube broadly ovate or subglobose, quite naked, glaucous, and tinged with purple. Sepals $\frac{5}{8}$ to $\frac{3}{4}$ inch long, naked on the back but somewhat hairy towards the edges, the more luxuriant ones furnished with 3 or 4 erecto-patent toothed pinnae on each side, all copiously setoso-ciliated. Petals deep red, the flowers measuring about 1 inch across. Styles villose. Fruit subglobose, not at all narrowed at the neck, measuring about $\frac{5}{8}$ inch each way, ripening in September, by which time the erecto-patent sepals have all fallen.

“Found by Mr. S. King in the neighbourhood of Luddenden near Halifax, in West Yorkshire.”

England. Shrub. Summer.

Of this plant I have seen no specimen, so I have extracted Mr. Baker's description from the “Naturalist,” not venturing to write a description contrasting it with the other species without having specimens or drawings of the plant before me.

Mr. Baker considers it as coming near *R. sepium*, but differing in the size, shape, and colour of the leaves, with hairy ribs and petioles; also in its peculiar bracts, stipules, and peduncles, subglobose fruit, slightly hairy sepals, and villose styles.

Short-pedicelled Rose.

SPECIES XII.—*ROSA JUNDZILLIANA*. Besser.

Baker, in Nat. 1864, p. 65.

Prickles rather numerous, large, slightly curved, nearly equal, not intermingled with aciculi and gland-tipped setae. Leaflets oval, very acutely doubly-serrate, dull greyish-green and sparingly pubescent but becoming glabrous when mature above, pale hairy on the veins and with numerous viscous glands beneath. Pedicels rather long, with oval bracts, thickly clothed with gland-tipped aciculi. Styles sparingly hairy. Fruit subglobose or broadly

urceolate-ovoid, thickly clothed with gland-tipped aciculi, "or nearly naked." — (Baker.) Sepals deciduous, falling before the fruit is ripe, leaf-pointed, generally sparingly pinnate, clothed with gland-tipped setæ.

Gathered by Mr. F. M. Webb and Mr. H. S. Fisher, in a hedge near Morton, Cheshire; only one bush actually known. From this some doubts may be entertained of its being native.

England? Shrub. Summer.

I am indebted to Mr. Baker for a specimen of this plant. It agrees in general appearance with *R. tomentosa*, but the prickles resemble those of *R. Borreri*, and the leaves are more glandular and less thickly pubescent than those of the *Villosæ* group. Mr. Baker describes it as a vigorous bush with arching stems, about 6 feet in height, the flower pink and about the size of *R. tomentosa*. The fruit $\frac{3}{4}$ to $\frac{7}{8}$ inch long by $\frac{3}{4}$ broad, with the sepals falling before it changes colour. He says that the Cheshire plant agrees well with the French plant sent him by M. Déséglise, except that the prickles are more robust.

Jundzil's Rose.

French, *Rose de Jundzil.*

SPECIES XIII.—*ROSA BORRERI*. Woods.

PLATE CCCCLXXI.

Baker, in Nat. 1864, p. 63. *Woods*, Trans. of Linn. Soc. Vol. II. p. 210.

R. dumetorum, *Sm.* Eng. Bot. No. 2579.

R. inodora, "*Fries.*" *Borreri*, in E. B. S. No. 2610, *note*.

Prickles numerous, large, curved, uniform, not intermixed with aciculi and gland-tipped setæ. Leaflets oval or elliptical, sharply serrate, with the serratures again very faintly serrated, deep green above where they are sparingly hairy when young but glabrous when mature, paler more hairy and with a few sticky almost scentless glands beneath. Pedicels short, with large oval bracts, and clothed with a few aciculi and gland-tipped aciculi. Styles hairy. Fruit urceolate-ovoid, scarlet when ripe. Sepals deciduous, falling by the time the fruit is ripe, leaf-pointed, entire, or slightly pinnatifid, "varying from almost naked to a good deal glandular on the outside." — (Baker.)

In hedges and thickets. Apparently not common. Only known

certainly to occur in Sussex, Kent, Worcestershire, and Yorkshire, and possibly Northumberland.

England, Scotland ? Shrub. Summer.

This plant forms one of the connecting links between *R. micrantha* and *R. canina*, differing from the former in its larger size, much fewer glands on the leaflets, larger stipules, fewer aciculi and gland-tipped setæ on the pedicels, and more hairy styles. The sepals are also more broadly triangular and with a shorter leaf-point.

I suspect that this should stand as a sub-species of *R. canina* if the *Caninæ Sub-rubiginosæ* of Mr. Baker be rightly referred to that species.

The Northumbrian plant gathered in a hedge at Spring Gardens, near Newcastle, by Mr. Robertson, "differs from *Borreri* in having a few setaceous aciculi and a few setæ intermixed with its prickles, leaves more glandular beneath and the glands faintly odorous, the terminal leaflet being nearly as broad as long and much rounded at the base, by its deeper coloured flowers, more elongated calyx-tube and fruit, and more persistent sepals."—(Baker, *l. c.* p. 64.) Mr. Baker thinks this may be the true *R. inodora* of Fries, of which he has not seen an authenticated specimen.

Borreri's Rose.

SECTION IV.—CANINÆ.

Large bushes with arching or sub-erect main stems and rather slender branches. Shoots with the prickles scattered, uniform, not intermingled with aciculi or gland-tipped setæ. Leaves glabrous or hairy, without glands or with a few on the under side. Pedicels on a corymbose cyme, usually naked. Styles not united. Fruit ovoid, with deciduous or sub-persistent sepals.

SPECIES XIV.—*ROSA CANINA*. Linn.

PLATES CCCCLXXII. CCCCLXXIII. CCCCLXXIII.* CCCCLXXIV.

Baker, in *Nat.* 1864, p. 93.

Prickles scattered, large, curved or hooked, uniform, not intermingled with aciculi and gland-tipped setæ. Leaflets elliptical or oval, doubly or simply serrate, varying from glabrous to sparingly hairy, sometimes with a few sticky not fragrant glands beneath. Pedicels short with oval bracts, usually naked. Styles glabrous or hairy. Fruit ovoid or subglobose, scarlet when ripe. Sepals deciduous or sub-persistent, leaf-pointed and usually more

or less pinnatifid, generally glabrous, but sometimes with gland-tipped setæ on the outside.*

Mr. Baker distinguishes the following forms, which he arranges under four groups.

GROUP I.—SUBRUBIGINOSÆ.

Leaves sparingly glandular beneath, either all over or only on the principal veins. Pedicels naked or with aciculi. Fruit various.

The plants of this group are placed by M. Déséglise in the section Rubiginosæ. They appear to me to be best placed with *R. inodora* and *Borreri*, except *R. vinacea*, which appears to be a true Dog-rose.

1. *Rosa Blondæana*. *Ripart*.

Baker, in *Nat.* 1864, p. 103.

Stem with divaricate branches; prickles moderate, slightly curved. Leaflets elliptical or obovate-elliptical, glaucous above, glabrous and glaucous with scattered glands (which are most abundant on the midrib beneath), sharply doubly serrate, with the secondary serratures gland-tipped. Petioles glandular, destitute of hairs. Stipules and bracts glabrous, ciliated with gland-tipped setæ. Pedicels with a few aciculi and gland-tipped setæ. Styles thickly hairy. Fruit naked, obovate or subglobose, turning scarlet in September. Sepals leaf-pointed, pinnate, with gland-tipped setæ on the outside, some of them falling by the time the fruit changes colour.

In hedges. Kilvington, North-east Yorkshire; and Mr. Baker has gathered a very similar plant in the counties of Perth and Aberdeen.

* I am indebted to Mr. Baker for specimens of the greater number of the forms of the Dog-roses which he has so carefully worked out and compared with Continental specimens named by M. Déséglise. I however feel myself quite unable to come to any satisfactory conclusion as to how many of the forms ought to be regarded as sub-species; indeed this, as in the case of the Rubi, can only be ascertained by continued cultivation from seed, so as to ascertain what forms are really permanent, as it is impossible to determine *à priori* what characters invariably descend unchanged from the parent to the offspring.

2. *Rosa Bakeri*. *Déséglise*.

PLATE CCCCLXXIII.

Déséglise, in Journ. of Bot. 1864, p. 267.*Baker*, in Nat. 1864, p. 102.

Main stem scarcely arching, with short spreading branches; prickles moderately strong, slightly curved. Leaflets oval or elliptical-oval, firm, softly and thinly hairy above, thickly hairy and with numerous small green scattered glands beneath, doubly serrated, the secondary serratures tipped with gland-tipped hairs, and ciliated with short woolly hairs; petioles with woolly hairs and numerous gland-tipped setæ and a few prickles. Stipules and bracts densely pubescent and thickly glandular, ciliated with short gland-tipped setæ. Pedicels short, naked or with a few aciculi and gland-tipped setæ. Styles woolly. Fruit glabrous, ovoid, ripening early in September. Sepals leaf-pointed and pinnate, ciliated with gland-tipped setæ, and with a few scattered on the outside, remaining until the fruit changes colour.

In hedges at Sowerby, North-east Yorkshire.

*Baker's Rose.*3. *Rosa tomentella*. *Leman*.*Baker*, in Nat. 1864, p. 102.

Branches short, flexuous; prickles strong, much curved. Leaflets roundish-ovate, or ovate, rather firm, very thinly hairy above, paler and rather densely so, especially on the veins, and with a few scattered glands beneath, doubly serrate, with the serratures gland-tipped, and ciliated with woolly hairs; petioles with numerous woolly hairs, and a few short gland-tipped setæ and prickles. Stipules and bracts pubescent beneath, ciliated with short gland-tipped setæ. Pedicels very short, naked. Styles woolly. Fruit subglobose, glabrous, turning scarlet in October. Sepals leaf-pointed, pinnate, nearly naked on the back, with a few gland-tipped setæ on the margins, falling before the fruit changes colour.

In hedges in North Yorkshire and in Warwickshire.

4. *Rosa arvatica*. *Puget*.*Baker*, in Nat. 1864, p. 101.

Stems arched, with rather slender branches; prickles stout, hooked. Leaflets elliptical or oval-elliptical, glabrous above, paler

hairy and glandular on the veins beneath, acutely doubly serrate, with the secondary serratures gland-tipped, without hairs; petioles hairy, with rather numerous gland-tipped setæ, and a few prickles. Stipules and bracts sub-glabrous, with a few scattered glands, closely ciliated with gland-tipped setæ. Pedicels naked. Styles sub-glabrous. Fruit subglobose-ovoid, turning scarlet in October. Sepals leaf-pointed and copiously pinnate, slightly glandular on the outside, ciliated with gland-tipped setæ, falling before the fruit changes colour.

In hedges at Sowerby and Kilvington, North Yorkshire, and near Newcastle.

5. *Rosa vinacea*. *Baker*.

Baker, in *Nat.* 1864, p. 101.

Stems arched, with rather slender branches; prickles stout, hooked. Leaflets elliptical, glaucous-green, firm, glabrous above, paler, glabrous and glandular on the principal veins beneath, very acutely doubly serrate, with the secondary serratures gland-tipped; petioles glabrous, with gland-tipped setæ, and a few small prickles. Stipules and bracts glabrous, closely ciliated with gland-tipped setæ. Pedicels very short, naked. Styles hairy. Fruit subglobose, glabrous, turning scarlet in October. Sepals slightly leaf-pointed, entire, or sparingly pinnate, with a few gland-tipped setæ, most numerous on the margins, falling before the fruit changes colour.

In hedges at Thirsk, North Yorkshire.

This seems to be a glandular form closely allied to *R. dumalis*, as far as I can judge from seeing only a single dried specimen.

GROUP II.—HISPIDÆ. *Baker*.

Leaves without glands beneath; pedicels more or less densely clothed with aciculi and gland-tipped aciculi. Calyx-tube occasionally with gland-tipped aciculi.

6. *Rosa cæsia*. *Sm.*

PLATE CCCCLXXIII.*

Baker, in *Nat.* 1864, p. 100.

Leaflets oval, firm, glaucous-green and glabrous above, more glaucous and hairy (especially on the veins) beneath, sharply and nearly simply but somewhat irregularly serrate; petioles woolly, with numerous gland-tipped setæ and a few prickles. Stipules and

bracts slightly hairy beneath, closely ciliated with gland-tipped setæ. Peduncles with numerous aciculi and gland-tipped aciculi. Calyx-tube naked. Sepals leaf-pointed, sparingly pinnate, glandular on the outside.

In Highland valleys in Perthshire and Inverness-shire. Mr. Baker considers a plant found by the Rev. W. M. Hind, near Stapenhill, Derbyshire, to be closely allied to *R. cæsia*, differing only in the leaves being slightly hairy above and the calyx-tube and sepals aciculate.

7. *Rosa verticillacantha*. *Merat?*

Baker, in *Nat.* 1864, p. 100.

Leaflets elliptical, firm, bright green and glabrous above, paler and glabrous beneath, sharply doubly serrate, with the secondary serratures gland-tipped; petioles glabrous, with gland-tipped aciculi and a few small prickles. Stipules and bracts glabrous, ciliated, with gland-tipped setæ. Pedicels with numerous aciculi and gland-tipped aciculi. Styles sparingly hairy. Fruit elliptical-ovoid, not ripening till October. Sepals "somewhat glandular on the back, and densely setoso-ciliated, deciduous by the time the fruit changes colour."—(*Baker, l. c.*)

In hedges at Myton, Warwickshire, and Twycross, near Atherstone, Warwickshire: and a similar plant with a densely prickly calyx-tube was found by the late Mr. T. Clark in Somersetshire.

8. *Rosa andegavensis*. *Bastard.*

Baker, in *Nat.* 1864, p. 100.

R. canina γ, *Woods.*

Leaflets broadly oval, firm, glabrous on both sides, sharply and nearly simply but somewhat irregularly serrate; petioles glabrous, with a few gland-tipped setæ and prickles. Stipules and bracts glabrous, sparingly ciliated with gland-tipped setæ. Pedicels and base of calyx with numerous aciculi and gland-tipped aciculi. Styles woolly. Sepals leaf-pointed, pinnate, glandular and prickly on the outside, but scarcely ciliated.

Pass of Lanrick (Mr. Borrer) and Braemar (Mr. H. C. Watson).

GROUP III.—SUBCRISTATÆ. *Baker.*

Leaves without glands beneath. Pedicels naked, or only accidentally with a few aciculi or gland-tipped aciculi. Fruit pliable

when green, ripening early in September. Sepals erect-spreading after the petals fall, and usually adhering till after the fruit changes colour.

9. *Rosa celerata*. *Baker*.

Baker, in *Nat.* 1864, p. 99.

Stems arching; prickles stout, hooked. Leaflets broadly ovate, thin, firm, green and glabrous above, paler and hairy on the principal veins beneath, shallowly doubly serrate, the secondary serratures gland-tipped; petioles shortly pubescent, with numerous short gland-tipped setæ. Stipules and bracts glabrous, ciliated with gland-tipped setæ. Pedicels naked, as long as the bracts. Styles hairy. Fruit subglobose, smooth, turning scarlet early in September. Sepals leaf-pointed and copiously pinnate, glabrous in the middle on the outside, and ciliated with gland-tipped setæ, remaining until after the fruit changes colour.

Thickets in Holywell Dean, Northumberland.

10. *Rosa coriifolia*. *Fries*.

PLATE CCCCLXXII.*

Baker, in *Nat.* 1864, p. 98.

R. bractescens, *Woods*, et *Auct. Angl.*

Stems arching; prickles rather slender, very slightly curved. Leaflets roundish-ovate, thick, greyish green and hairy above, paler and softly pubescent beneath, shallowly serrated, without gland-tipped setæ; petioles woolly, nearly destitute of gland-tipped setæ, and with few prickles. Stipules and bracts densely pubescent beneath, with scarcely any gland-tipped setæ on the margin. Pedicels naked, extremely short, much shorter than the bracts. Styles woolly. Sepals leaf-pointed, and copiously pinnate, naked on the outside but usually tomentose towards the edges, nearly destitute of gland-tipped setæ at the edges.

Ulverstone, Lancashire (Mr. Woods), and Castleton of Braemar (Mr. H. C. Watson), and a less hairy form is plentiful in hedges at Thirsk, North Yorkshire.

A specimen collected by Winch, near Newcastle-on-Tyne, has, according to Mr. Baker, the large bracts and short peduncles of

* The plate is taken from a drawing made by Mrs. Baker from Mr. Watson's specimens, which unfortunately perished in the disastrous fire which took place on Mr. Baker's premises on 9th May, 1864.

R. coriifolia, but the shape, vestiture, and serration of the leaves bear a greater resemblance to those of *R. Watsoni*.

Leathery-leaved Briar.

German, *Ledderblättrige Rose*.

11. *Rosa Watsoni*. Baker.

Baker, in *Nat.* 1864, p. 98.

R. bractescens β, *Woods*.

“Leaves glabrous on the upper surface, the teeth sharper and closer than in *R. coriifolia*, not always simple, the accessory serrations gland-tipped, somewhat hairy beneath; the terminal leaflet ovate; the petioles villose, but hardly at all setose. Stipules and bracts nearly glabrous on the back, slightly setoso-ciliated, not peculiarly large, nor hiding the peduncle as in *R. coriifolia*. Peduncle naked. Calyx-tube ovate-urceolate. Sepals erecto-patent after the petals fall, leaf-pointed and fully pinnate, glandular all over the back.”—(*Baker, l. c.*)

Ambleside, Westmoreland (*Woods*), and between Dalwhinnie and Etrisk, Inverness-shire (*Mr. H. C. Watson*).

12. *Rosa subcristata*. Baker.

Baker, in *Nat.* 1864, p. 97.

R. tomentosa γ, *Woods*.

Stem arching; prickles stout, curved. Leaflets oval or elliptical, leathery, glaucous-green and glabrous above, more glaucous and glabrous beneath, sharply and irregularly or imperfectly doubly serrate, some of the smaller serratures gland-tipped; petioles with scattered hairs, gland-tipped setæ, and a few prickles. Stipules and bracts glabrous, ciliated with gland-tipped setæ. Pedicels naked, very short, shorter than the bracts. Styles woolly. Fruit turning scarlet early in September. Sepals glabrous or glandular on the outside, leaf-pointed, sparingly pinnate, more or less ciliated with gland-tipped setæ, mostly adhering until the fruit is fully ripe.

In hedges and thickets. Yorkshire, Cheshire, Northumberland, Perthshire.

Mr. Baker finds at Keld, in Swaledale, Yorkshire, a rose with deep red flowers, pedicels with a few gland-tipped aciculi, and sepals glandular on the outside, which in other respects agrees with his *R. subcristata*.

13. *Rosa Crepiniana*. *Déséglise*.

Baker, in *Nat.* 1864, p. 97.

Stems arching; prickles stout, hooked. Leaflets oval or elliptical, glaucous-green and glabrous above, more glaucous and glabrous beneath, sharply and simply or imperfectly doubly serrate, scarcely any of the serratures gland-tipped; petioles nearly destitute of hairs or gland-tipped setæ, but with a few prickles. Stipules and bracts glabrous, sparingly ciliated with small gland-tipped teeth. Pedicels glabrous, short, rather shorter than the bracts. Styles densely woolly. Fruit turning scarlet early in September. Sepals leaf-pointed and copiously pinnate, naked or with a few gland-tipped setæ on the outside, tomentose on the margins, scarcely or not at all ciliated with gland-tipped setæ, mostly adhering until the fruit is fully ripe.

Hedges in North-east Yorkshire.

Mr. Baker finds plants similar to the above, but with a few gland-tipped aciculi on the pedicels, at Wood-end, Thirsk, and Chesterholme, Northumberland.

GROUP IV.—EU-CANINÆ. *Baker*.

Leaves without glands beneath. Pedicels naked, or only accidentally with a few aciculi or gland-tipped setæ. Fruit stone-hard when green, ripening in the end of September or October. Sepals reflexed after the petals fall, and deciduous before the fruit changes colour.

14. *Rosa canescens*. *Baker*.

Baker, in *Nat.* 1864, p. 97.

Stems arching; prickles stout, hooked. Leaflets oval-elliptical, firm, sparingly hairy when young but sub-glabrous and greyish-green when mature above, paler and closely pubescent beneath, sharply and shallowly doubly serrate, with the secondary serratures gland-tipped; petioles thinly woolly, with a few gland-tipped setæ. Stipules and bracts pubescent beneath, ciliated with gland-tipped setæ. Pedicels naked, longer than the bracts. Styles hairy. Fruit roundish-ovoid, ripening in October. Sepals leaf-pointed and copiously pinnate, pubescent on the outside, ciliated with gland-tipped setæ, falling before the fruit is ripe.

Near Thirsk, Yorkshire.

Mr. Baker remarks that this plant has a resinous scent, and that the leaves resemble those of *R. tomentosa*, while the fruit is that of normal *R. canina*.

15. *Rosa pruinosa*. *Baker*.

Baker, in *Nat.* 1864, p. 96.

R. cæsia, *Borrer*, in *Hook.* *Brit. Fl.* (in part, not *E. B.*).

Stem slightly arching; prickles rather slender, slightly curved. Leaflets broadly ovate, rather thin, sparingly hairy when young but sub-glabrous and glaucous-green when mature above, glaucous and thinly-hairy beneath; petioles with woolly hairs and a few gland-tipped setæ. Stipules and bracts sub-glabrous, "hairy on the back" (*Baker*), sparingly ciliated with gland-tipped setæ. Pedicels naked, as long as or shorter than the bracts. Styles sparingly hairy. Fruit subglobose, ripening in the end of September. Sepals leaf-pointed and pinnate, glabrous on the outside, with tomentose edges, sparingly ciliated with gland-tipped setæ, falling before the fruit is ripe.

Marrick Moor, and by the Swale near Keld, Yorkshire, also by the bridge between Swallwell and Axwell Park, Durham.

The form from thickets by the side of the Swale has the sepals glandular all over the outside.

16. *Rosa dumetorum*. "*Thuill.*" *Woods*.

Baker, in *Nat.* 1864, p. 96.

Stem arching; prickles stout, hooked. Leaflets elliptical or oval, more or less acuminate, moderately thick, thinly-hairy when young but sub-glabrous and greyish-green when mature above, grey and thinly-hairy (especially on the veins) beneath, simply but irregularly and shallowly serrate, the serratures not gland-tipped but ciliated with woolly hairs; petioles woolly, with very few gland-tipped setæ. Stipules and bracts sub-glabrous (pubescent in one of the specimens sent me by Mr. Baker, authenticated by M. Crepin), sparingly ciliated with very short gland-tipped setæ and woolly hairs. Pedicels naked, as long as or shorter than the bracts. Styles thinly-hairy. Fruit usually large, ovoid-urceolate, "sometimes subglobose" (*Baker, l. c.*), ripening in the end of September. Sepals leaf-pointed and copiously pinnate, glabrous on the outside, tomentose on the edges, scarcely ciliated with gland-tipped setæ, falling before the fruit ripens.

In hedges. Common near Thirsk, Yorkshire, and probably generally distributed.

17. *Rosa uncinella.* Bess.

Baker, in Nat. 1864, p. 95.

“Habit of growth and prickles of the normal *R. canina*. Leaves flat, grey-green, slightly-hairy on the upper surface when young, but glabrous when mature, greyer still and hairy all over beneath, so that the edge is ciliated, firm in texture, the serrations simple, spreading and open, as broad as they are deep, callous at the tips, the terminal leaflet broadly oval or obovate, much rounded at the base; the petioles villous, but hardly at all glandular, furnished usually with 2 or 3 hooked prickles. Stipules and bracts slightly hairy on the back, dentate but hardly at all gland-ciliated. Peduncles naked. Calyx-tube and fruit large, broadly elliptical or subglobose, the green fruit rather more pliable than in *R. platyphylla*. The sepals reflexed after the petals fall, leaf-pointed and fully pinnate, tomentose, and slightly glandular on the back, hardly at all setoso-ciliated. Styles villous.”—(*Baker, l. c.*)

Banks of the Yore, at Aysgarth Force, North-west Yorkshire.

18. *Rosa platyphylla.* Rau.

Baker, in Nat. 1864, p. 95.

Stem arching; prickles stout, hooked. Leaflets broadly oval or obovate-oval, rather firm, flat, greyish-green and glabrous above, glaucous and thinly-hairy beneath, sharply deeply and irregularly serrate, the serratures not gland-tipped; petioles thinly woolly, with gland-tipped setæ and prickles. Stipules and bracts thinly-hairy on the back, with a few gland-tipped setæ on the margins, but not regularly ciliated. Pedicels naked, as long as or shorter than the bracts. Styles villose. Sepals leaf-pointed, pinnate, nearly destitute of gland-tipped setæ on the edges. The mature fruit has not been seen either by Mr. Baker or myself, but is described by M. Déséglise as ovoid, with the sepals falling before maturity.

At Giggleswick and Settle, West Yorkshire.

Of this plant I have only seen imperfect specimens.

19. *Rosa urbica*. *Leman.*

PLATE CCCCLXXIV.

Baker, in *Nat.* 1864, p. 94.*R. Forsteri*, *Sm.* *Borrer*, in *E. B. S.* No. 2611.*R. collina* β , *Woods*, in *Trans. of Linn. Soc.* Vol. XII. p. 219.

Stems arching; prickles stout, hooked. Leaflets ovate-oval, rather firm, not flat, green or slightly glaucous and glabrous above, paler and downy on the veins beneath, deeply, sharply, and irregularly but simply serrate, the serratures destitute of gland-tipped setæ, but ciliated with woolly hairs; petioles woolly, with a very few gland-tipped setæ and prickles. Stipules and bracts subglabrous or sparingly pubescent beneath, ciliated with gland-tipped setæ and woolly hairs. Pedicels naked, as long as or shorter than the bracts. Styles hairy. Fruit urceolate-ovoid, or subglobose, ripening in October. Sepals leaf-pointed and copiously pinnate, with a very few gland-tipped setæ on the edges, falling before the fruit is ripe.

In hedges and thickets. Very common, and generally distributed.

"A closely-allied plant from Hawnby bank and hedges at Sowerby, near Thirsk, with slightly double serrations, peduncles a little aciculate, sepals not fully reflexed and a little glandular on the back, is referred doubtfully by *M. Déséglise* to *R. platyphylloides*, *Ripart*."—*Baker*, *l. c.*

20. *Rosa dumalis*. *Bechst.**Baker*, in *Nat.* 1864, p. 94.*R. sarmentacea*, *Woods*. *Borrer*, in *E. B. S.* No. 2595.

Stem arching; prickles stout, curved. Leaflets ovate or elliptical, more or less acuminate, rather firm, not flat, green or glaucous-green and glabrous both above and beneath, deeply and acutely doubly serrate, the secondary serratures gland-tipped; petioles subglabrous, with a few gland-tipped setæ and small prickles. Stipules and bracts closely ciliated with gland-tipped setæ. Pedicels short, naked. Styles hairy. Fruit varying from ovoid-urceolate to sub-globose, ripening in October. Sepals leaf-pointed and copiously pinnate, glabrous on the back, more or less densely ciliated with gland-tipped setæ, falling before the fruit is ripe.

In hedges and thickets. Very common, and generally distributed.

This is distinguished from all the preceding Dog-roses by the leaflets being quite glabrous both above and beneath.

21. *Rosa lutetiana*. *Leman*.

Baker, in *Nat.* 1864, p. 94.

R. canina, *Déséglise*, *Essai Monogr. de Rosiers de la France*, p. 61.

Woods, *Sm. Eng. Bot.* No. 992.

Stem arching; prickles stout, hooked. Leaflets oval or elliptical, rather firm, not flat, green or glaucous-green and glabrous on both sides, closely deeply sharply and irregularly but simply serrate, the serratures without gland-tipped setæ; petioles glabrous, nearly destitute of gland-tipped setæ, but with a few small hooked prickles. Stipules and bracts glabrous, usually not ciliated with gland-tipped setæ. Pedicels short, naked. Styles slightly hairy. Fruit urceolate-ovoid or subglobose, ripening in October. Sepals leaf-pointed, copiously pinnate, sub-glabrous on the outside, more or less ciliated with gland-tipped setæ, falling before the fruit ripens.

In hedges and thickets. Very common throughout the kingdom.

This is distinguishable from the last by the leaves having the serratures closer and simple, *i.e.* without small gland-tipped teeth upon them. From all the other Dog-roses the leaves glabrous on both sides is sufficient to separate it.

It is utterly impossible to give any accurate distribution of these forms of the Dog-rose; many of them will, no doubt, be found to be much more widely spread than has been indicated.

England, Scotland, Ireland. Shrub. Summer.

The greater number of the plants included under *R. canina* have arching stems 6 to 10 or 12 feet high, with very large uniform mostly curved prickles. Leaves and leaflets about the size of those of *R. tomentosa*; the flowers generally 2 or 3 together, $1\frac{1}{2}$ to 2 inches across, most commonly pale pink.

Common Dog-rose.

French, *Rosier Eglantier*. German, *Hunds Rose*.

The Wild Rose of our hedges is of the same family as many of our most attractive garden favourites; and although these have a more rich and striking beauty, there are those who prefer the simple charms of the common Dog-rose. All the numerous varieties of double Rose cultivated in our gardens possess the same properties as this plant. The fruit of the Dog-rose, or "hips" as they are called, has long

been used to make a conserve with sugar, and is an article included in the Pharmacopœia. The so-called fruit is truly the enlarged persistent calyx enclosing the real fruits, which are numerous small achenia, clothed, as well as the inside of the calyx, with silky hairs. In preparing them for officinal use, the hairs and achenia are to be carefully removed, and the fleshy calyx beaten to a pulp, to which, gradually, thrice their own weight of white sugar is to be added. The employment of heat in the preparation of this conserve is directed in the Pharmacopœia; but it is better omitted. The pulp consists chiefly of malic and citric acids, in combination mostly with some salts, tannin, resins, a small quantity of volatile and fixed oils, woody fibre, and a large quantity of sugar. The action on the stomach is slightly refrigerant and aperient, its sweetness recommending it to children, and as a vehicle for other medicines. It is apt to candy or concrete by keeping. The fresh hips, freed from the fruit and hairs, bruised, and having a little sugar added, yield, by having hot water poured on them, a cooling mildly-astringent drink, which would be grateful to the poor suffering from autumnal fevers. In former times, when garden fruit was scarce, these hips were esteemed for dessert. Gerarde assures us that the hips of the rose "maketh the most pleasurable meats and banqueting dishes, and tarts and such-like, the making whereof" he commits to the "cunning cooke and teethe to eate them in the riche man's mouth." The Germans still use them as an ordinary preserve; and this, as well as a preserve of the blossom, is employed in our own village confectionary. The flowers still form an article of luxury among the Chinese; and Sir John Davis, in describing a feast given to him at Shanghai, mentions a *ragoût* of the flowers of the common China Rose dressed whole, which celestial and ambrosial dish he, however, declares to have been a mixture of salt, sour and other indescribable flavours, such as forbade a repetition; being therein of a different opinion from Master Gerarde, who affirms that they are greatly to be desired as a culinary vegetable, "as well for their virtues and goodness in taste, as also for their beautiful colour." Gerarde hints at "divers other pretty things made of roses and sugar, which are impertinent unto our historie."

Pliny, Galen, and others have dwelt much on the virtues of the tufty spongioses which we often find growing on the branches of wild Roses, and which children call "Robin's pincushions." All sorts of medicinal qualities have been attributed to them, and they were supposed to be parts of the Rose itself; but we know now that they are excrescences produced by the insect powers of the *Cynips Rosæ*, a little insect which deposits its eggs in the miniature bud, and thus arrests its development.

Of the Roses we have many varieties which are favourites in the garden. *R. Indica*, the China Rose, is perhaps the most beautiful, and is found wild about Canton, in China. It blossoms six or eight times a year, and its colour varies from a delicate blush to a deep crimson. There is a hybrid variety between this species and the *R. odorata*, which is well known in gardens as the tea-scented China Rose. The varieties of this pretty Rose grow abundantly in France in the open air; they do not well bear the climate of England. The Austrian Rose—*Rosa lutea*—is known by its foliage existing only at the extremity of its branches; prickles under the stipules, and leaflets hollow. The most brilliant yellow roses are produced from this species: they require a moist and dry pure air, and do well without pruning. The Rose, as among Eastern nations, has ever been a favourite in France. Some of the French deeds or "acts" of the Middle Ages contain clauses stipulating for certain "rentes" of Roses. Such rents, too, have been paid in our own country. Lord Brougham still holds the castle of High Head *in capite* of the Queen "by the service of a red Rose rendered annually at Carlisle." In

the East the Rose has ever been a favourite flower, and in the imaginative language of the poet its praises have been set forth. It is the Musk Rose, *R. moschata*, which we are told in Eastern story is the chosen flower of the nightingale, among the branches of which he is supposed to sit and sing his love-tale, and the delicate petals of which constitute his only food :—

“For there the Rose, o’er crag and vale
Sultana to the nightingale,
Blooms blushing to her lover’s tale,
His queen, his garden queen, his Rose.”

Moore alludes to this legend with his usual fervour :—

“O ! sooner shall the Rose of May
Mistake her own sweet nightingale,
And to some meaner minstrel’s lay
Open her bosom’s glowing veil,
Than love shall ever doubt a tone,
A breath of the beloved one.”

But it is not only when in all its blushing beauty that the Rose possesses its fragrant charms : even when about to wither and fall away, the scent remains ; and large quantities of Roses are cultivated for the sole purpose of making extracts of different sorts. In hot countries a large quantity of volatile oil is elaborated by the flowers of the species of Roses which grow in those climates, — such as *R. moschata*, *R. Damascena*, and others. The valuable and delicious perfume known as “attar” or “ottor of Roses,” is said to be procured in the following simple manner :—A large vessel is filled with the picked petals of Roses ; they are covered with spring-water, exposed to the sun daily for a week ; oily particles gradually rise to the top and come together : these are carefully removed by a piece of cotton, and tightly corked in small bottles. A perfumer in Paris, who made this costly preparation for Louis XVI., declares that four thousand pounds weight of rose-leaves yielded only seventeen ounces of the oil. We can estimate in this way the costliness of the scent and the great temptation there is to adulterate it with other oils. Rose-water is made by distillation, and was at one time in extensive use among the great and rich, and on state occasions was always presented in silver-gilt ewers :—

“Attend him with a silver basin
Full of rose-water.”

This custom is now almost entirely confined to our City feasts, and goes in company with the loving-cup, and some other remnants of an age when the pleasures of the table were regarded in quantity rather than quality.

The old-fashioned compound called *pot pourri* preserves much of the original freshness of the scent of the flower ; but for this purpose the Wild Rose and the new varieties which fill our gardens are alike useless ; no kind should be used but the old sweet-scented damask, cabbage, or moss Roses. The Rose petals should be strewn on sheets of paper and carefully dried in the sun, and should then be put in a large China jar with bay-salt between the layers. Lavender-flowers and other ingredients may be added at discretion. The flowers generally used are clove-pinks, violets, orange-flowers, jessamine, and rosemary ; but only a small quantity of each, so as not to overpower the

Roses. An old recipe, in which our grandmothers delighted, and which, when concocted by their busy hands, served to perfume the state chambers for many a day, is as follows :—

A few laurel and bay-leaves, knotted marjoram and dried balm of Gilead : besides these, to every two pecks of rose-leaves there should be orris-root sliced, gum benjamin and storax, 2 oz. of each ; $\frac{1}{4}$ oz. of musk, $\frac{1}{4}$ lb. of angelica-root sliced, and three Seville oranges stuck as full of cloves as possible, dried in a cool oven, and either pounded or thrown in whole.

Englishmen exalt the Rose as their national flower, for ever happily blended with the shamrock and thistle ; but we must not forget that at one period of our history it was the symbol for internal war and bloodshed, when the Red and the White Roses, and those that wore them, as nearly related to each other as the flowers themselves, waged a deadly fight with each other,—when, according to Skakespeare, Warwick says to Plantagenet :—

“ This brawl to-day,
Grown to this faction in the Temple Garden,
Shall send between the Red Rose and the White
A thousand souls to death and deadly night.”

A prophecy which was but too fatally fulfilled.

The Union or York-and-Lancaster Rose, a very elegant variety, with mixed red and white petals, has been generally referred to the marriage of Henry VII. with Elizabeth, daughter of Edward IV., by which the animosity of the contending houses was happily and finally extinguished. An old author penned the following lines, worthy of Anacreon, on presenting a white Rose to a Lancastrian lady :—

“ If this fair Rose offend thy sight,
It in thy bosom wear ;
’Twill blush to find itself less white,
And turn Lancastrian there.”

The old saying, to speak “under the rose,” is somewhat difficult to explain ; but mythological writers afford a solution to it by telling us that “Cupid, the god of love, made Harpocrates, the god of silence, a present of the first Rose, to bribe him not to divulge the secrets of his mother Venus.” Hence the Rose became the symbol of silence, and was usually placed above the heads of the guests in banqueting-rooms, in order to banish restraint, and intimate that nothing would be divulged that was said *sub rosa*.

According to old legends, the Rose was created without thorns, which grew on the plant in consequence of the wickedness of men. It was said to be the chosen flower of Mahomed, the Eastern prophet ; and travellers in Syria and Egypt give us wonderful accounts of the rose-gardens there, and the delight which the inhabitants take in the perfume of the flower. Among the Persians the Feast of Roses is a time of rejoicing, and lasts through the whole time of their flowering.

As a sacred emblem in the Roman Catholic Church, the Rose has long been regarded. It is supposed to be an emblem of the Virgin, and was recognized as such by St. Dominic when he introduced the devotion of the Rosary, with direct reference to the life of St. Mary. The prayers are said to have been symbolized as Roses.

The Wild Rose is sometimes called the Canker in various parts of the country ; but, as it is a term of reproach, we do not desire to perpetuate it. Shakespeare alludes

to it when Hotspur makes his reproachful speech to the earls of Northumberland and Worcester, accusing them of trying

“To put down Richard, that sweet, lovely Rose,
And plant this thorn, this Canker Bolingbroke !”

Therein meaning a usurper, which is certainly an unfair use of the term when applied to our own native wild hedge-side Rose, blowing in our quiet country lanes, or clothing dry sand-banks with a spring robe of beauty, and perfuming the air with its sweetness.

GROUP V.—SYSTYLÆ.

Bushes with sub-erect or trailing stems; shoots with the prickles scattered, uniform, not intermingled with aciculi or gland-tipped setæ. Leaves glabrous above and glabrous or slightly hairy beneath. Pedicels numerous, in a sub-umbellate cyme, furnished with sessile glands or gland-tipped aciculi or naked. Styles united into a column. Fruit ovoid or subglobose, with deciduous sepals.

SPECIES XV.—*ROSA SYSTYLA*. Woods.

PLATE CCCCLXXV.

Baker, in Nat. 1864, p. 143.

R. collina, *Sm.* Eng. Bot. No. 1895.

Stem erect or arching; prickles scattered, large, curved, uniform, not intermingled with aciculi or gland-tipped setæ. Leaflets elliptical acuminate, sharply and unequally serrate, but not regularly doubly serrate, glabrous above, sparingly pubescent on the veins beneath, nearly or entirely destitute of glands. Pedicels rather elongate, with elliptical acuminate bracts, furnished with a few short gland-tipped aciculi and setæ, very rarely naked. Petals pink. Styles glabrous, united, forming a column of variable length, surrounded by a convex disk destitute of glands. Stigmas in an ovoid head. Fruit ovoid, rarely globular, scarlet. Sepals deciduous, moderately long, leaf-pointed, and pinnate.

In hedges and thickets. Rare, and apparently confined to the southern counties of England, where it has occurred in Somerset, Sussex, Kent, Essex, Middlesex, Gloucester, Worcester, Cambridge, and in South Wales.

England, Ireland. Shrub. Summer.

A tall plant, often 8 or 10 feet high, with the habit of *R. canina*, but with the leaves usually more sharply serrated and the corymb consisting of more numerous flowers. Flowers of the size and colour of those of *R. canina*.

Mr. Baker thinks the British plant is probably the *R. systyla* of Bastard, which has been doubted both by Mr. Borrer and Mr. Woods. I am strongly inclined to agree with Mr. Bentham in considering this a form of *R. canina*, to which opinion Mr. H. C. Watson likewise inclines. It appears to have no connection with *R. arvensis*, except in the purely artificial character of the united styles.

Columnar-styled Dog-rose.

French, *Rosier à Cotonne en massue*.

The specific name of this Rose comes from the words *συν* (*syn*), together, and *στυλος* (*stylos*), a column, in reference to the styles being connected. All the Roses, known in our gardens as Banksian Roses, belong to the same division. They are named after Lady Banks, and are natives of China. Generally they grow well in the open air against a sheltered wall, and succeed better in a dry situation than in a moist one. The seeds are not perfected in this country, but are in Spain and Italy. The common British species differs very little to the ordinary observer from the ordinary Wild Rose.

SPECIES XVI.—*ROSA ARVENSIS*. *Huds.*

PLATE CCCCLXXVI.

Baker, in *Nat.* 1864, p. 141.

Stem with long trailing shoots; prickles scattered, small, uniform, not intermingled with aciculi or gland-tipped setæ. Leaflets oval or oblong-oval; finely and rather remotely and unequally serrate, glabrous on both sides, glaucous or whitish-green beneath. Pedicels elongate, with lanceolate bracts and a few very short gland-tipped setæ, sometimes almost naked. Petals white. Styles glabrous, united into a long slender column surrounded by a flatly conical disk without glands; stigmas in a roundish-ovoid head. Fruit ovoid or sub-globose, scarlet when ripe. Sepals deciduous, short, leaf-pointed, entire or slightly pinnatifid.

1. *Rosa repens*. *Scop.*

PLATE CCCCLXXVI.

Leaves dull-green above. Pedicels erect. Sepals slightly pinnate, shorter than the petals.

In hedges and woods. Very common, and generally distributed in England, rare in Scotland, and probably not native north of the Forth and Clyde.

2. *Rosa bibracteata*. *Bastard*.

R. arvensis γ, *Borrer*, in *Hooker's Brit. Fl.* ed. ii.

Leaves shining-green above. Pedicels spreading-erect. Sepals longer and more pinnate than in *R. repens*.

Rare. About Hensfield and other places in Sussex.

England, Scotland, Ireland. Shrub. Summer.

R. arvensis cannot be confounded with any of the other British species; the trailing shoots, the leaves with shallow broad-based teeth, glaucous but not pubescent beneath, and the pure white flowers, distinguish it at a glance from all the other Roses.

No. 2 I have not seen, but Mr. Borrer in this country and M. Déséglise in France agree in remarking that it resembles the South European species *R. sempervirens*. Mr. Baker says that the stems are stronger than in the common form of *R. arvensis*.

White-flowered trailing Rose.

French, *Rosier des Champs*. German, *Feld Rose*.

This pretty Rose is found in open situations, and is a trailing plant, sometimes rooting at the joints; but in hedges and among bushes it is a climber by elongation, reaching to their tops and covering them with tufts of foliage and flowers; the leaves remaining on late in the season, and the fruit continuing often to the winter. Several varieties of this climbing Rose are cultivated by nurserymen, who call them Double-hip Roses, and use them to cover naked walls or unsightly buildings. The growth and cultivation of Roses is a subject of special interest to the gardener, and every year we find, from the different floral exhibitions, that great improvements are being made in the art of growing perfect Roses. They will by no means grow everywhere, and as a rule require a clear atmosphere and a light soil. Masses of Roses planted together, in beds edged with wire so as to imitate a basket, have a very pretty effect, and the delicious scent they emit is very grateful. Standard Roses are best on lawns or flower-beds placed singly. The Monthly Rose being protected by glass in autumn, or aided by artificial heat, may be continued in bloom till Christmas. A very common mode of obtaining late Roses, and one of the greatest antiquity, is by cutting all the flower-shoots off when the buds begin to appear, or by rubbing off all the rudiments of shoots of every kind early in the spring. A second crop is in consequence produced, which will not be in a state to blossom before the autumn. A great number of insects seem to delight in the flowers of Roses, from the earwig to the golden-green Rose-chaffer. There seems to be no remedy for insects on plants in the open air so simple and effectual as gathering them by hand, or removing the leaf or part of the shoot affected by them. Under cover, tobacco smoke will often destroy the little aphides or "green-fly," but is perfectly harmless to many other insects. The pretty ladybird is one of the gardener's best friends, as in its larva state it greedily devours the aphides, which may be seen (especially in dry seasons) smothering the young shoots and buds of Roses, sucking their juices, and so preventing the flowers from attaining their full development: the lace-wing fly is another useful auxiliary. The beauty of the Rose is often impaired by the froth of *Cicada spumaria* (cuckoo-spit, as it is commonly called); but the singular transformations of this little insect are an interesting entomological study. The leaf-cutter bee carries

on her operations on the leaves of the Rose-tree, and may be watched by those who care to observe her curious ingenuity.

An old proverb says, "Years of store of haws and hips do commonly portend cold winters;" but we fail to trace any connection between the two.

SUB-ORDER III.—POMIFERÆ.

Trees or shrubs, with simple or more rarely pinnate leaves. Stipules free, persistent only on the barren shoots, deciduous on the flowering ones. Calyx superior (adhering to the ovary), persistent, the segments shrivelling. Petals white, pink, or red. Stamens indefinite. Carpels adhering to the walls of the calyx-tube and usually cohering with each other, 5 in number or fewer by abortion. Ovules 2, rarely more, in each carpel. Styles terminal. Fruit a pome, consisting of a fleshy exterior portion, containing a parchment-like or woody core, divided into as many cells as there are carpels, each cell commonly containing 2 seeds.

GENUS XIII.—COTONEASTER. "*Medikus*," Lindley.

Calyx-tube turbinate, adhering to the ovary; limb superior, 5-toothed. Petals 5, inserted in the throat of the calyx, ovate, erect. Stamens numerous, inserted in the throat of the calyx, and equalling its limb. Carpels 2 to 5, adhering to the tube of the calyx, but cohering together, each carpel with 2 erect collateral ovules. Styles 2 to 5. Fruit fleshy, containing 2 to 5 bony stones or pyrenes adhering to the tube of the calyx, but projecting above the pulp and separate for about one-third of their length from the apex downwards.

Shrubs with alternate simple entire leaves, woolly below. Flowers small, white or pink, in spreading lateral corymbose cymes. Bracts subulate, deciduous. Petals small, persistent.

This genus of plants is named from the similarity of its foliage to the *Cotoneum* (quince-tree).

SPECIES I.—COTONEASTER VULGARIS. Lindley.

PLATE CCCCLXXVII.

Mespilus Cotoneaster, Linn. Sp. Plant. p. 686.

Leaves roundish ovate, apiculate, with a whitish felt beneath and on the footstalks. Pedicels slightly downy. Calyx glabrous, with the edges of the teeth woolly. Fruit pendulous, red.

On the cliffs at the Great Ormes Head, Carnarvonshire.

England. Perennial. Shrub.

A small much-branched shrub, without spines; young branches woolly. Leaves shortly stalked, $\frac{3}{4}$ to 2 inches long, though rarely exceeding 1 inch in the British specimens I have seen, rounded at the apex, except on the young shoots, where they are sub-acute. Stipules lanceolate, scarious, red, woolly at the edges. Flowers solitary or in pairs, in the axils of the leaves from the wood of the preceding year. Peduncles a little longer than the calyx, at first erect, then curved. Bracts minute, reddish, woolly at the margins. Flowers $\frac{1}{6}$ inch across, pink. Calyx turbinate, with short rounded teeth, which have a woolly fringe. Petals suborbicular-ovate, not much exceeding the calyx-teeth. Styles usually 3. Fruit $\frac{1}{4}$ inch across, blood-red, sub-globular, shining. Leaves somewhat leathery, deep-green above, whitish beneath.

Common Cotoneaster.

French, *Cotonnier Commun.* German, *Gemeine Zwergmispel.*

This shrub has been called the dwarf quince-leaved Medlar. The roots run very deep into the earth, and it was recommended by Linnæus for making low hedges in dry broken ground; but Hooker states that it is liable to be browsed by sheep.

GENUS XIV.—MESPIUS. *Lindley.*

Calyx-tube bell-shaped, adhering to the ovary; limb superior, with 5 lanceolate somewhat foliaceous segments. Petals 5, inserted in the throat of the calyx, sub-orbicular, spreading. Stamens numerous, inserted in the throat of the calyx, and shorter than its segments. Ovary inferior, 5-celled, each cell containing 2 erect collateral ovules. Styles 5, distinct and glabrous. Fruit roundish-turbinate, crowned by the calyx-segments which retain their form, open at the apex, where there is a depressed shallow cavity as wide as any part of the fruit and marked with 5 radiating depressed lines indicating the partitions between the carpels, fleshy, containing 5 bony stones or pyrenes immersed in the pulp and each containing a single seed.

Small trees, generally spinous when wild, but becoming unarmed by cultivation, with simple lanceolate serrulate leaves, and large sub-solitary and sub-sessile white flowers, remarkable from the very long foliaceous calyx-segments, which exceed the petals. Bracts persistent.

There are two derivations given for the name of this genus. One author says it comes from μέσος (*mesos*), a half, and πῖλος (*pilos*), a bullet, from the fruit resembling half a bullet. Another gives as the origin the words μέσος, middle, and πῖλεω, I bind together, referring to the astringent qualities of the species.

SPECIES I.—MESPILUS GERMANICA. *Linn.*

PLATE CCCCLXXVIII.

Branches spinous in the wild plant. Leaves shortly stalked, oblong-ob lanceolate, abruptly acuminate, entire or finely serrated, slightly pubescent beneath. Flowers shortly stalked, solitary.

In hedges and thickets. Rare, and doubtfully native. The counties to which it has most claim are those of Sussex, Kent, Surrey, and Worcester; it is found also in Devonshire, but is acknowledged to be planted. I have only met with it near Reigate, Surrey, where it appears to me not to have the slightest claim to be considered native.

England? Tree. Early Summer.

A large shrub, more rarely a tree, with spreading tortuous branches, many of them armed with spines. Leaves unequal in size, the largest close to the flowers, where they are from 2 to 4 inches long. Flowers $1\frac{1}{2}$ inch in diameter. Pedicels very short, felted-pubescent. Calyx-segments deltoid, attenuated into a long linear foliaceous point, exceeding the petals. Petals obovate, roundish. Styles 5. Fruit depressed, turbinate, $\frac{3}{4}$ inch across or more, rarely produced in the wild plant, slightly downy, reddish brown, containing 5 compressed rugose stones, embedded in rather dry pulp.

Wild Medlar.

French, *Néflier Commun.* German, *Deutsche Mispel.*

The Medlar-tree was known to the Greeks, and has been in cultivation in British gardens for an indefinite period; not only the species but several varieties being mentioned by Turner, Gerarde, Parkinson, and other early British writers on botany and gardening. The fruit is never eaten until it is in an incipient state of decay: when firm and sound, they are singularly harsh and austere, but acquire a flavour agreeable to many by being kept. The fruit should be gathered towards the end of October or November, when some should be laid in moist bran to hasten their decay, others on straw; those in the bran will be ready for eating in about a fortnight, and those laid on straw will gradually come forward in succession. In the North of England the fruit seldom ripens, though it blossoms freely. Loudon tells us that in some of the old gardens about Twickenham there are Medlar-trees growing from 25 to 30 feet in height, with heads from 30 to 40 feet in diameter. In Bagshot Park, in Surrey, one planted twenty years ago is 18 feet high.

GENUS XV.—CRATÆGUS. (*Linn.*), *Lindley*.

Calyx-tube urceolate, adhering to the ovary; lamina superior, divided into 5 short lobes or teeth. Petals 5, inserted in the throat of the calyx, orbicular, spreading. Stamens numerous, inserted with the petals. Ovary inferior, 1- to 5-celled, each cell containing 2 erect ovules. Styles 1 to 5, distinct. Fruit ovoid, with the calyx-segments deciduous or persistent and withering, open at the apex, where there is a concavity narrower than the widest part of the fruit; fleshy, containing 1 to 5 bony stones or pyrenes immersed in the pulp, and each containing a single seed.

Small spiny trees or shrubs, with simple leaves which are often cut or lobed, and white or pink flowers in corymbose cymes, rarely solitary. Bracts deciduous.

This genus is named from the hardness and toughness of its wood—*κρατος* (*cratos*) strength.

SPECIES I.—CRATÆGUS OXYACANTHA. *Linn.*

PLATES CCCCLXXIX. CCCCLXXX.

Branches with short spines. Leaves stalked, wedge-shaped at the base, more or less deeply lobed, glabrous. Flowers numerous, in a corymbose cyme. Calyx-segments not glandular. Styles 1 to 3. Fruit small, ovoid or sub-globular, dark red.

SUB-SPECIES I.—Cratægus oxyacanthoides. *Thuill.*

PLATE CCCCLXXIX.

C. Oxyacantha, var. *a*, *Bab. Man. Brit. Bot. ed. v. p. 116.*

C. Oxyacantha, *Linn. (Jacq.). Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 258. Fries, Sum. Veg. Scand. p. 42. Gr. & Godr. Fl. de Fr. Vol. I. p. 567.*

Mespilus Oxyacantha, *Willd. Wallr. Sched. Crit. p. 219.*

Leaves obovate or rhomboid-obovate, with 3 to 5 lobes, margins slightly convex from the base to the apex of the first lobe, usually serrated; lobes scarcely longer than broad, generally rounded. Peduncles commonly glabrous. Calyx-tube glabrous; segments glabrous, ovate-deltoid, acuminate, spreading-reflexed, with recurved points. Styles usually 2 or 3. Fruit with 2 or 3 stones.

In hedges and woods. Not very common; plentiful in the forests to the north of London; as Enfield Chase, Epping, Hainault, and Whittlebury Forests.

England, Scotland, Ireland. Shrub or Tree. Early Summer.

Generally a large straggling bush, 6 to 10 feet high, with tufted branches. Leaves shortly stalked, lamina 1 to 2 inches long, narrowed from beyond the middle to the base, the basal angle usually less than a right angle, with slightly convex sides, the lobes generally short and blunt, more rarely abruptly acuminate into a short point; midrib very prominent beneath, the other veins much less so. Stipules on the barren shoots half arrow-shaped, denticulate. Corymbs lax, few-flowered. Peduncles long and slender. Flowers white, $\frac{3}{4}$ inch across, with the petals scarcely contiguous. Fruit ovoid or roundish-ovoid, generally with 2 stones embedded in rather soft pulp. Leaves deep green, somewhat leathery, very glossy.

Glabrous White-thorn, or Hawthorn, May.

French, *Alisier aubépine*. German, *Gemenier Weissdorn*.

SUB-SPECIES II.—*Cratægus monogyna*. Jacq.

PLATE CCCCLXXX.

C. Oxyacantha, var. β , *Bab. Man. Brit. Bot. ed. v. p. 117*.

Mespilus monogyna, *Willd. Wallr. Sched. Crit. p. 221*.

Leaves rhomboidal or rhomboidal-ovate, with 3 to 5 lobes, margins straight or concave from the base to the apex of the first lobe, usually entire, except at the tips of the lobes; lobes longer than broad, and acute at the apex. Peduncles generally downy. Calyx-tube more or less downy; segments slightly downy, ovate-triangular, acuminate, suddenly reflexed. Style 1. Fruit with 1 stone.

In hedges, woods, thickets, and on heaths. Very common, and generally distributed, though probably introduced in many of its localities, being the form that is generally used for quickset hedges, and planted in pleasure-grounds.

England, Scotland, Ireland. Shrub or Tree. Early Summer.

A much-branched bush, with stiff very prickly branches, in favourable localities becoming a tree 15 or 20 feet high. Leaves much more deeply cleft and less glossy than in *C. oxyacanthoides*, sometimes even pinnatipartite, with acute segments. Peduncles and calyx generally clothed with whitish pubescence. Flowers in more compact corymbs, more numerous, rather smaller, $\frac{5}{8}$ inch across, white, rarely pink. Fruit smaller. Leaves with the midrib and the veins which run into the main lobes prominent beneath.

It appears to me that this shrub is entitled to be considered distinct from the preceding, though intermediate states occur, which render it difficult to agree with the great majority of foreign

authors, who consider it a distinct species. It blooms about a fortnight later than the last when they grow in the same locality, and is recognisable at some distance by its less glossy leaves. I have never seen *C. oxyacanthoides* coming up amongst the seedlings of whitethorn in nursery-grounds; so that, at all events, that form does not seem to be produced from the seeds of *C. monogyna*: whether the converse be the case I am unable to say.

Common White-thorn, or Hawthorn, May.

French, *Aubépine à style*. German, *Enggriffeleger Weissdorn*.

The Hawthorn is known to every one, even to the London resident, as a hedge-tree in the suburban lanes, and as the greatest ornament of the parks in the spring season of the year. Were it not for the beautiful flowering-trees which are the glory of our country, and which surprise and delight all strangers, the London citizen would scarcely know when spring begins, or be able in any measure to enjoy that most delicious of all seasons of the year. The sweet-scented flowers in May, and the bright red fruit in autumn, are a compensation for the absence of many rural pleasures which can only be had in the country. The Hawthorn seldom attains any great size; its chief use is as a hedge-plant; but Loudon mentions several from 20 to 30 feet in height, and 9 or 10 feet in circumference, and we know that in the London parks there are even now trees of considerable size. Perhaps one of the most striking features of an English landscape is its thick well-grown hawthorn hedges, clipped so close, however, that it is seldom that the white flowers are allowed to blossom luxuriantly in a well-kept hedge. Hedges of this kind are called quickset hedges, and are often spoiled through inattention and want of care. Wherever thorn hedges are planted and intended to thrive, the ground ought to be trenched at least two feet in depth, manured, if poor, and the plants inserted on a flat surface, so as to receive all the moisture that falls in the shape of rain. The margin of the ditch ought always to be two or three feet from the plants, and the earth excavated instead of being raised into a ridge over the roots of the plants, where it can be of little or no use to them, should be spread over the general surface so as to increase the depth of nutritive soil. This mode of making hedges may somewhat increase the first expense, but will be found the best in the end, as more speedily producing a permanent fence and a substantial one. When grown to the required size, the hedge should be cut every year, or at least every alternate one. So kept, hedges of this plant will last for very many years without requiring renewal; but when allowed to grow ragged and high, and then cut down in the usual manner, they are more or less injured and become thin and poor, and form no sufficient protection. It sometimes happens that the Hawthorn suffers severely from the attacks of insects, and the hedges and trees present a very unsightly appearance, the leaves being entirely consumed, and withered bits mixed with the cocoons of the caterpillar, which is the marauder, hanging from the bare branches, when they ought to be in luxuriant foliage. Such has been the case this present year 1864 with nearly all the May-trees in the London parks: they flowered beautifully, but immediately after were attacked by the little larvæ of a moth, and present at this time (July) a miserable spectacle. Whether the buds of the next year have been injured remains to be seen. *Cratægus Oxyacantha* was known to the Greeks under the name of *Pyracantha*, although there is some dispute as to whether it was our identical species. Homer tells us that when Ulysses returned to his father Laertes, the good old man had sent his servants into the woods to get

young thorns for hedges, and he employed himself the while in preparing the ground to receive them.

In England thorn hedges seem to have been in use since the time of the Romans. In all old works on husbandry, directions are given for forming "quickset hedges," and in 1611 an old author gives very particular instructions as to enclosing young plantations with a "good ditch and quickset of white thorne." The wood of the Hawthorn is very hard, and difficult to work; its colour is white with a yellow tinge, and it takes a beautiful polish. The branches are useful for many purposes; they are good for fires, as they burn readily; they are also used for forming dead hedges, and the strong knotted branches make good and firm walking-sticks. The fruit of the Hawthorn is seldom eaten in England, excepting by children, though it is said to be nutritious. In Kamtchatka it is much liked, and a sort of wine is made from it by fermentation with water. The bark contains tannin, and was used in former days in the Highlands with sulphate of iron to form a black dye for wool. The Hawthorn attains a great age when not cut or otherwise injured; and we quite agree with its warmest admirers in thinking that in a picturesque point of view the Hawthorn gives place to no other tree. Whether we see it in the spring time, covered with its snowy blossoms, or in the autumn with its glowing berries, we must regard it not only as an interesting object in itself, but as contrasting and grouping with other trees in a remarkably beautiful manner. Phillips remarks that the garland of Flora does not possess a more charming blossom than this British hedge beauty, nor do the most luxuriant species of Asia yield a more grateful perfume than this flowering shrub. Hawthorn blossoms have been associated with the floral games of May from time immemorial. They were regarded as the emblems of Hope, and were carried by girls in wedding processions of the ancient Greeks, and laid on the altar of Hymen, which was lighted with torches made of this wood. The Troglodytes tied branches of Hawthorn to their dead when they were buried. In some parts of France the Hawthorn is called *l'épine noble*, because it is supposed to have been the thorn used for crowning the Saviour, and the country people believe it always utters groans and sighs on a Good Friday. Others put a bunch of Hawthorn in their hats to preserve them against lightning in a thunder-storm. The most remarkable legend connected with the Hawthorn is that of the Glastonbury thorn. It is said to have sprung from the staff of Joseph of Arimathea, who, it is believed, founded the first Christian church in these islands, and that this miracle was wrought in order to convince the natives of his divine mission. The legend adds that it was on Christmas-day that this vegetation of the staff occurred, and that the thorn still continues to blossom annually on the same day. The French have a legend that on the day after the massacre of St. Bartholomew, on August 25th, an old thorn in the churchyard of St. Innocent, in Paris, came into blossom a second time.

The poets who have sung the praises of the Hawthorn are almost as numerous as those who have written of the rose.

Chaucer, in his "Court of Love," makes all his court go forth on May-day to gather in the flowers, and—

"Marke the faire blooming of the Hawthorne-tree,
Who finely cloathed in a robe of white,
Fills full the wanton eye with May's delight."

And we read in Shakespeare's "Henry the Sixth :"—

"Gives not the Hawthorn-bush a sweeter shade
To shepherds looking on their silly sheep,

Than doth a rich embroider'd canopy
To kings who fear their subjects' treachery?"

But perhaps no poet ever drew a fairer picture of the Hawthorn than Goldsmith, in his "Deserted Village :"—

"The Hawthorn-bush with seats beneath the shade,
For talking age and whispering lovers made."

The custom of going a Maying is of very great antiquity. The Greeks and Romans gathered May in honour of Flora, whose festival began with the month of May. In Britain we read of King Henry VIII., with his queen Katherine, and the lords and ladies of their court, going out a-Maying from Greenwich to Shooter's Hill. In a curious old MS., entitled "The State of Eton School," 1560, it is stated, "On the day of St. Philip and St. James, May 1st, if it be fair weather, and the master grants leave, those boys who choose it may rise at four o'clock to gather May branches, if they can do it without wetting their feet." We do not hear of any such innocent custom being continued in the revelations of the recent Public School Commission. We have to go back several generations to find the observances of May-day in their fullest development. They are evidently remnants of a heathen festival connected with the ancient floral games, which began about the 28th of April, and were connected with the early spring flowers, of which the Hawthorn is perhaps the most attractive. Not only did royal personages and the Eton boys go into the fields to gather the snowy boughs, but people of all ranks and conditions joined in the festival, and the prettiest maiden in the village was crowned "Queen of the May;" the lads and lasses met together, danced and sang and made merry in honour of the day, bringing home garlands and boughs wherewith to decorate their houses and churches. In almost every village a pole was fixed as high as the mast of a vessel of a hundred tons, on which each May morning were suspended wreaths of flowers, and round which the Mayers danced in rings nearly all the day. The Puritans discountenanced the vanity of these proceedings, but after the Restoration they revived. Maypoles were again erected, and the appropriate rites recommenced. Now, alas! in the course of the change of manners, the Maypole has again vanished: they must be old people who remember seeing one. In London there are and have long been a few forms of May-day festivity in a great measure peculiar. The day is still marked by a celebration well known to every resident in the metropolis, in which the dancing sweeps play the sole part. Why this black profession should have been the last sustainers of the old rites of May-day in the metropolis we cannot say. At no very remote period there used to be a similar demonstration from the milk-maids, who would lead a milch cow, all garlanded with flowers, and dance round the animal to the sound of fife and drum.

The most renowned of Maypoles is the one erected in the Strand immediately after the Restoration, and alluded to by many writers of the period as afterwards by Pope, who says :—

"Where the tall Maypole once o'erlook'd the Strand."

We nowadays find it hard to associate rural festivities with the busy thoroughfare where this gathering-point for floral wreaths and joyous dances once stood. Very interesting accounts exist in old chronicles of the doings and sayings of our forefathers on these May-day *fêtes*; and we can but remember many of their innocent, pleasant old customs when we see the Hawthorn-trees that delighted their eyes, year after year still bringing forth their fragrant white blossoms, dear to the present generation, though less boisterously welcomed.

The Hawthorn among the Highlanders is the badge of the Ogilvies.
In the well-known lines of Milton—

“ And every shepherd tells his tale
Under the Hawthorn in the dale,”

great have been the disputes as to what the shepherd is supposed to tell; whether it be the *tails* of his sheep or his *tale* of love, is still a matter undecided.

There are several varieties of Hawthorn, some having fine bright scarlet berries, others fruit of golden yellow.

GENUS VII.—PYRUS. (*Linn.*), *Lindley*.

Calyx-tube urceolate, adhering to the ovary, lamina free, divided into 5 short lobes or teeth. Petals 5, inserted in the throat of the calyx, sub-orbicular. Stamens numerous, inserted with the petals. Ovary inferior, 5-celled, rarely 2- or 3-celled, each cell containing 2 collateral ascending ovules. Styles 5, distinct or cohering at the base, sometimes only 2 or 3. Fruit ovoid, roundish, or turbinate, crowned by the withering calyx-segments, closed at the apex, where there is a very small concavity, fleshy, containing 5, more rarely 1 to 4, cartilaginous or parchment-like cells, cohering together and forming a core, each cell containing 2 seeds or (by abortion) only 1.

Trees or shrubs, with simple or pinnate leaves, and white or rose-coloured flowers in spreading, terminal, simple or compound corymbose cymes. Bracts subulate, deciduous.

The name of this genus is derived from the Celtic word *peren*, a pear.

SUB-GENUS I.—SORBUS. *Linn.*

Fruit small or rather small, sub-globular or turbinate-sub-globular, containing 2 to 5 cells; cells formed of thin brittle membrane, 1-seeded by abortion. Flowers mostly in compound corymbose cymes, cream-white. Petals spreading. Styles 2 to 5, distinct or united below.

SPECIES I.—PYRUS TORMINALIS. *Ehrh.*

PLATE CCCCLXXXI.

Sorbus torminalis, *Crantz.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 263. *Fries*, Sum. Veg. Scand. p. 42. *Gr. & Godr.* Fl. de Fr. Vol. I. p. 574.
Cratægus torminalis, *Linn.* *Sm.* Eng. Bot. No. 298.

Leaves broadly ovate, downy when young, glabrous on both sides when mature, truncate rounded or sub-cordate at the base,

acuminate at the apex, with 3 or more triangular serrated lobes on each side; lobes usually acuminate and very acute at the apex, the basal ones spreading, incisions between the lobes deepest towards the base; veins 3 to 6 on each side. Flowers in compound corymbs, with the pedicels and calyx-tube densely pubescent. Styles 2 to 5, glabrous. Fruit roundish-ovoid, brown, speckled with whitish points when ripe.

In woods, copses, and hedges. Rather rare; confined to the southern half of England, where it is probably wild as far north as Norfolk and South Wales. In Scotland it only occurs in ornamental plantations.

England, [Scotland]. Tree. Early Summer.

A tree sometimes 30 or 40 feet high, but often much less. Bark purplish-brown, the young shoots downy. Leaves 2 to 4 inches long when full grown, and often nearly as broad when measured from tip to tip of the basal lobes, which are separated for from half to three-quarters of their length from the adjacent ones; margins of the lobes irregularly serrated. Corymbs 10- to 50-flowered, from the termination of the shoots of the same year, rather lax. Flowers $\frac{1}{2}$ inch across, white. Calyx-segments deltoid, sub-glabrous. Petals orbicular, suddenly contracted into a short claw. Styles generally 2. Fruit $\frac{1}{2}$ to $\frac{3}{4}$ inch long, olive-brown with pale rough dots. Cells of the fruit generally 2, each containing a single seed. Leaves firm when old, and then glabrous except on the veins beneath.

Very distinct from the other British species, as *Sorbus latifolia*, Persoon, the connecting link between *P. torminalis* and *P. Aria*, does not occur in Britain.

Wild Service-tree.

French, *Alisier Torminal*. German, *Elsbeere*, *Ruhrbirne*.

This tree grows to a height of forty or fifty feet in woods and hedgerows. It generally grows in clayey soils. Miller, writing in 1752, says that it was formerly very abundant in Cane Wood, near Hampstead. One of the finest specimens in England in Loudon's time was at Arley Hall, near Bewdley. The fruit is sometimes brought to market both in England and France, and when in a partial state of decay, eats somewhat like a medlar. As an ornamental tree, its large green buds recommend it in the winter time, as its fine large-lobed leaves do in the summer, and its clusters of brown fruit in the autumn. The wood is hard and tough, like that of all the genus, but is seldom of sufficient size to be of use.

SPECIES II.—*PYRUS ARIA*. Hook.

PLATES CCCCLXXXII. CCCCLXXXIII. CCCCLXXXIV. CCCCLXXXV.

Hook. & Arn. Brit. Fl. ed. viii. p. 141. Benth. Handbook Brit. Fl. p. 203.

Leaves roundish, oval, oblong-oblanceolate or oblong, white-felted or grey flocculent-felted beneath even when old, rounded or wedge-shaped at the base, rather obtuse at the apex, more or less deeply lobed and serrated at the margins; lobes blunt or sub-acute at the apex; veins 6 to 12 on each side. Flowers in compound corymbs, with the pedicels and calyx-tube felted. Styles generally 2, woolly at the base. Fruit sub-globular or ovoid, scarlet when ripe.

SUB-SPECIES I.—*Pyrus eu-Aria*.

PLATE CCCLXXXII.

P. Aria, *Elrh.* (in part). *Bab. Man. Brit. Bot. ed. v. p. 117; et Auct. Plur.*

Sorbus Aria, *Crantz.* *Fries*, *Sum. Veg. Scand. pp. 42, 176.*

Cratægus Aria, *Linn. Sp. Plant. p. 681 (in part).*

Leaves roundish- or broadly-oval, ovate, or elliptical, flocculent above until after the flowers expand, pure white-felted beneath, rounded or abrupt at the base, with numerous small lobes from below the middle to the apex, incisions between the lobes deepest about one-fourth from the apex; lobes broader than long, pointing towards the apex of the leaf, blunt or sub-acute, unequally serrated; veins 10 to 12 on each side, very prominent beneath.* Calyx-segments reflexed in flower, erect in fruit.

In woods, copses, on chalky banks and limestone rocks. Common in the southern half of England. I have it from Somerset, Hants, Wilts, Gloucester, Kent, Surrey, Berks, and Monmouthshire, and it probably occurs in the neighbouring counties. One specimen has been sent from Ronald Kirk, Teesdale, by Mr. J. G. Baker, but marked as a possible alien. In Scotland it is only to be seen in ornamental plantations.

England, [Scotland], Ireland? Tree. Early Summer.

A small tree, 10 to 20 feet high, or more rarely merely a large bush, with dark brownish bark. Leaves fasciated on the spurs or flowering branches, remote on the woolly barren shoots, those of the spurs 3 to 6 inches long, flocculent above when young, but at length glabrous; beneath pure white, from the abundance of felted woolly hairs; leaves on the barren shoots generally narrower than the others, more acute and more deeply lobed. Flowers $\frac{3}{8}$ inch across, in a much-branched lax corymb, with the pedicels and calyces densely woolly. Petals roundish, concave, white. Fruit $\frac{1}{2}$

* The leaves of the young shoots are exceedingly variable in form; the descriptions are therefore taken from those on the spurs, or short flowering-branches.

inch long, sub-globular, crowned by the connivent persistent but withering calyx-segments, woolly at the base and apex, sprinkled with a few impressed dots. Seeds 1 or 2 in each cell.

Common White-beam.

French, *Alisier Alouchier*. German, *Mehlbeere*.

This tree rises to a height of thirty or forty feet in favourable situations. The roots descend very deep and spread very wide, and the head of the tree is less affected by cutting winds than many others. It grows in the most exposed situations on bleak chalk hills, but is always stiff and erect. It has been known to writers on plants since the days of Theophrastus, and the fact that it has a distinct name in all the European languages shows that it has long been familiar to country people. Dr. Prior informs us that the word *beam* means simply a tree. It is called White-beam from the white down on the young shoots and under-surface, of the leaves; but "beam-tree," as it is often given, without the "white," is a vague and silly term.

As an ornamental tree the White-beam has very valuable properties. It is of moderate size and definite shape, and in summer, when clothed with leaves, it forms a compact green mass till it is ruffled by the wind, when it assumes a mealy whiteness. In the winter season the tree is attractive from its smooth branches and its large green buds, which, from their size and colour, seem already prepared for the spring, and remind us of the approach of that delightful season. When the tree is covered with fruit, it is exceedingly ornamental. The wood is very hard, of a fine close grain, yellowish-white, and susceptible of a high polish. It may be stained of any colour, and is much used in the manufacture of small articles,—such as handles to knives and forks, wooden spoons, &c. Combs, it is said, made from it equal those of boxwood. The great use, however, to which this wood is applied is for cogs to the wheels of machinery. It was always employed for this purpose, both abroad and at home, until cast iron superseded it. The fruit, when dried and reduced to powder, has been formed into a kind of bread, which has been eaten both in France and Sweden in times of scarcity. Fermented, the fruit affords a beer; distilled, a powerful spirit. It is greedily eaten by small birds; on which account the trees are preserved by our neighbours the French, in order to increase the number of these little creatures which we destroy, so that they may keep down the insects which attack the crops.

SUB-SPECIES II.—*Pyrus rupicola*

PLATE CCCCLXXXIII.

P. Aria, *Ehrh.* (in part). *Bab. Man. Brit. Bot.* ed. v. p. 117; et *Auct. Plur.*

Cratægus Aria (in part), *Linn. Sp. Plant.* p. 681.

Sorbus oblongifolia, *Reich.* *Fl. Germ. exsicc.* No. 2252 (!).

Sorbus Aria, var. *salicifolia*, "*Myrin.*" *Fries*, *Sum. Veg. Scand.* pp. 42, 176.

Leaves oblanceolate-obovate or oblong-obovate, pure white-felted beneath, glabrous above by the time the flowers expand, narrowed towards the base, generally with numerous small lobes from the middle to the apex, incisions deepest at the apex; lobes broader than long, blunt or sub-acute, directed towards the apex,

coarsely serrated; veins 5 to 8 on each side, prominent beneath. Calyx-segments spreading in flower, erect in fruit.

On exposed rocks, particularly those of limestone or trap. Sparingly but generally distributed. I have specimens from the counties of Devon, Derby (Matlock Bath), Carnarvon (Ormes Head), Durham (Holy Island), Yorkshire (Teesdale), Edinburgh (Queen's Park), Sutherland, and from Sligo (Ben Bulbin), Antrim (Glenarm).

England, Scotland, Ireland. Shrub or Tree. Early Summer.

Usually a bush 3 to 10 feet high, closely resembling *P. eu-Aria*, but with the leaves wedge-shaped towards the base and broadest beyond the middle, less deeply lobed, and with a greater portion at the base entire than in the *P. eu-Aria*; the upper surface becomes glabrous much sooner; the veins being more distant give the leaf a less ribbed appearance, as both in this and the preceding plant the veins are depressed on the upper and prominent on the lower surface. The partial corymbs which compose the general corymb are denser, the flowers a little larger, the calyx-segments not reflexed and rather narrower than in *P. eu-Aria*. The mature fruit I have never seen.

I have had much hesitation in separating this from *P. eu-Aria*, but there appeared to me no possible medium between adopting this course or making *P. Aria*, *P. scandica*, and *P. fennica* mere varieties. All the four forms pass insensibly into each other, and yet the extreme forms of each are too far apart to suppose it possible that the one could be derived in a limited time from the other. I am indebted for fresh specimens of the Derbyshire plant, from which the accompanying plate has been made, to Mr. Joseph Whittaker, for the Irish to Professor Dickie, for the Edinburgh to Mr. John Sadler. The Teesdale specimen is from Mr. Baker, who kindly sent me leaves from the different forms of *P. Aria*, of which he possessed specimens.

I regret that I cannot retain either Reichenbach's or Fries' specific name, in consequence of not separating the genera *Pyrus* and *Sorbus*: there is already a *Pyrus oblongifolia* of Spach and a *Pyrus salicifolia* of Linnæus.

Rock White-beam.

SUB-SPECIES III.—*Pyrus scandica*. Bab.

PLATE CCCCLXXXIV.

Bab. in Bot. Gaz. Vol. III. p. 35; and Man. Brit. Bot. ed. v. p. 118.

Sorbus scandica, Fries. Nov. Fl. Suec. p. 138; Sum. Veg. Scand. pp. 42, 175.

Crategus Aria, var. α , *scandica*, Linn. Amœn. Ac. Vol. II. p. 190.

C. Aria, β *Suecica*, Linn. Sp. Plant. p. 681.

Pyrus intermedia, "Ehrh." Lindley, Syn. Brit. Fl. p. 105.

P. aria, var. γ , Hook. & Arn. Brit. Fl. ed. viii. p. 141.

Leaves oval or sub-rhomboidal, glabrous above by the time the flowers expand, flocculent-felted and grey beneath, rounded or wedge-shaped with an angle generally greater than a right angle at the base; margins lobed from near the base to the apex, incisions deepest towards the middle of the sides; lobes longer than broad, blunt or sub-acute, directed towards the apex of the leaf, coarsely and acutely serrate; veins 5 to 8 on each side, slightly prominent beneath. Calyx-segments spreading in flower, erect in fruit.

In hilly woods. Rare. I have seen specimens in Mr. Watson's herbarium from North Devon, and Nightingale Valley, near Bristol, those from the latter locality, however, Mr. Watson thinks may be possibly a form of *P. eu-Aria*. In the herbarium of the late Mr. Borrer, at Kew, there are specimens from Carisbrook Castle, Isle of Wight, and Castle Dinas Bran, Denbighshire. I possess an example from near Plymouth, collected by Mr. Archer Briggs: this, however, is a barren shoot only, so that the leaves cannot be relied on for determining the plant with certainty. Miss Gifford has sent me fresh specimens from Minehead, Somerset, from which our plate is taken. Professor Babington mentions it from Culbone, Somerset; Silchester, Hampshire; and Pangbourne, Berkshire. I have carefully searched the Berkshire locality, but could find nothing but *P. eu-Aria*. That gentleman also mentions that it has been "gathered at High Force, Teesdale, by Mr. Hort," and this is no doubt the Rev. F. J. A. Hort; and if so, his determination in 1851 (the date of the notice) cannot be relied on for this species, as in 1852 he sent to the Botanical Society of London normal specimens of *P. eu-Aria* from Monmouthshire, labelled as *Pyrus scandica*, Bab.

England. Tree. Early Summer.

This differs from the two preceding forms of *P. Aria* in the lobes of the leaves being much more deeply separated from each other, and rather more acutely serrated, and the felt beneath being flocculent, much less dense and not pure white but yellowish, and as the green of the leaf appears through it, the underside of the latter has not the snowy appearance of *P. eu-Aria* and *P. rupicola*. The branches of the corymb are longer, so that it is more lax; the flowers are as large as those of *P. rupicola* and rather larger than in *P. eu-Aria*.

Smith's *P. "Aria,"* E. B., 1858, seems to be a bad figure of *P. scandica*.

The British plant seems to be intermediate between the Scan-

dinavian *Sorbus fennica* and the French and Swiss specimens called *Sorbus Mougeotii* by Godron and Soyer-Willmet.

Lobed-leaved White-beam.

SUB-SPECIES IV.—*Pyrus fennica*. *Bab.*

PLATE CCCCLXXXV.

Bab. Man. Brit. Bot. ed. v. p. 117.

Sorbus fennica, "*Kalm.*" *Fries, Sum. Veg. Scand. p. 42.*

S. hybrida, *Fries, Nov. Fl. Suec. p. 139*; and *Sum. Veg. Scand. p. 175.*

Cratægus Aria, var. γ , *Linn. Fl. Suec. p. 433.*

Pyrus pinnatifida, "*Ehrh.*" *Lindley, Syn. Brit. Fl. p. 105.* *Smith, E. B. 2331* (in part ?).

P. Aria, var. β , *Hook. & Arn. Brit. Fl. ed. viii. p. 141.*

Leaves oblong, oblong-rhomboidal, or ovate-oblong, glabrous above by the time the flowers expand, flocculent-felted and grey beneath, abrupt or wedge-shaped with an angle generally much greater than a right angle at the base; margins pinnatifid from near the apex to the base, incisions deepest at the base, frequently so much so as completely to separate from 1 to 4 pairs of lobes next the base, so that they become the separate leaflets of a pinnate leaf; lobes much longer than broad, directed towards the apex of the leaf, or the free basal ones spreading, rather finely serrate; veins 8 to 10 on each side. Calyx-segments applied to the petals in flowering, erect and inflexed in fruit.

In rocky places. Very rare, and wild only in the northern part of the Isle of Arran. It occurs, however, in plantations in other parts of Scotland and in England, but I cannot help suspecting that at least in some of the localities given for it the plant supposed to be *P. fennica* is a hybrid between *P. eu-Aria* and *P. Aucuparia*.

[England], Scotland. Shrub. Summer.

P. fennica is very closely allied to *P. scandica*, and indeed the leaves of some of the Arran plants resemble those of *P. scandica* more than they do the typical state of *P. fennica*. They have the same thin flocculent covering on the underside, but the incisions are deepest towards the base and not in the middle of the leaf. The flowers are considerably smaller, scarcely $\frac{1}{2}$ inch across, and the calyx-segments do not spread widely when in flower, and in fruit the apices bend inwards.

Smith's *P. pinnatifida* (E. B. 231) appears to be, at least in part drawn from the continental semipinnata of Roth.

Bastard Mountain-ash.

SPECIES III.—**PYRUS AUCUPARIA.** *Gärtn.*

PLATE CCCCLXXXVI.

Sorbus aucuparia, *Linn. Sp. Plant.* p. 683. *Sm. Eng. Bot.* No. 337.

Leaves pinnate, with 6 to 8 pairs of elliptical oblong serrate leaflets and an odd terminal one, downy beneath when young, generally glabrous when old. Flowers in a corymbose cyme. Calyx-segments applied to the petals when in flower, inflexed when in fruit. Styles generally 3, woolly at the base. Fruit small, ovoid-spherical, scarlet, generally 3-celled, more rarely 2- or 4-celled.

In woods and in hilly districts on rocks. Common, and generally distributed; most abundant in the North of England and Scotland, reaching as far North as Orkney and Shetland.

England, Scotland, Ireland. Tree. Early Summer.

A tree 10 to 30 feet high, with smooth brownish-grey bark, reddish on the regularly spreading branches. Leaflets 1 to 2 inches long, sub-sessile, with acuminate serratures which are rounded on the outer margin, pale beneath, but generally downy only on the veins when mature. Corymb compact, many-flowered. Flowers $\frac{2}{5}$ inch across, cream-white. Petals orbicular-concave. Fruit $\frac{1}{2}$ inch long, bright scarlet, with the flesh yellowish; the cells containing the seeds tougher than in the preceding species.

*Mountain-ash, Rowan-tree.*German, *Gaertn.* *Eberesche.*

This elegant tree is known to most persons in this country as an ornament of the shrubbery and plantation. Its beautiful pinnated leaves and bright scarlet berries make it an attractive object wherever it is seen. The tree grows rapidly for the first three or four years, attaining in five years the height of eight or nine feet, after which it begins to form a head, and in ten years will attain the height of twenty feet. This head will continue to increase slowly, though seldom growing higher, for the greater part of a century, after which the extremities of the branches begin to decay. The tree will not bear lopping, but grass and other plants grow well under its shade. It is a tree well adapted for small or suburban gardens, and is always a beautiful object: it never requires pruning, and never grows out of shape. Singing-birds rejoice in its berries, and the owner of such a tree has the double pleasure of listening to the songs of the thrush and the blackbird, and of beholding the brilliant branches of coral berries which tempt them there. In various parts of the North of Europe these berries are dried and ground into flour and used in times of scarcity. In Wales and the Highlands they are sometimes eaten, and the juice is fermented into a liquid resembling cider. Evelyn says: "Ale and beer brewed with these berries, being ripe, is an incomparable drink, familiar in Wales." He adds: "Besides the use of this tree for the husbandman's tools, goods, &c., the wheelwright commends it for being all heart; our fletchers (archers) commend it for bows next to yew, which we ought not to pass over for the

glory of our once English ancestors. In a statute of Henry VIII. you have it mentioned; and there is no churchyard in Wales without a Mountain Ash tree planted in it, as the yew-trees are in the churchyards in England. So, in a certain day in the year, everybody in Wales religiously wears a cross made of the wood, and the tree is by some authors called *Fraxinus Cambro-Britannica*."

In Germany fowlers bait springes or nooses of hair with the berries of this tree, which they hang in the woods to entice fieldfares and redwings: hence the specific name *Aucuparia*. Infused in water, the berries make an acid drink somewhat resembling perry. In the ancient days of superstition, the Mountain-ash was invested with peculiar charms, and we find many of them growing in the neighbourhood of Druidical remains. Gerarde writes: "The leaves of this tree are of so great vertue against serpents, that they dare not so much as touch the morning and evening shadows of the tree, but shun them afar off, as Pliny reports (*Let. 16, cap. 13*). He also affirmeth, that the serpent being penned in with boughs laid round about, will sooner run into the fire, if any be there, than come neere the boughs of the Ash; and that the Ash floureth before the serpents appeare, and doth not cast his leaves before they be gon againe. We write, saith he, upon experience, that if the serpent be set within a circle of fire and the branches, the serpent will sooner run into the fire than into the boughes. It is a wonderfull courtesie in nature that the Ash should floure before the serpents appeare, and not cast his leaves before they be gon againe." Gerarde adds: "The wood is profitable for many things, being highly exalted by Homer and by Achilles' speare, as Pliny writeth." Poets tell us that the Amazons of old formed their spears from the wood of the Mountain-ash. In more modern times the Rowan has been considered the antidote to witchcraft, and of greater efficacy even than the St. John's wort. It was planted before Highland houses to protect the inmates from the evil eye. Lightfoot writes: "They considered that any part of this tree carried about with them will prove a sovereign charm against all the dire effects of enchantment or witchcraft. Their cattle also, as well as themselves, are supposed to be preserved by it from evil; for the dairy-maid will not forget to drive them to the shealings or summer pastures with a rod of the Rowan-tree, which she carefully lays up over the door of the sheal, boothly, or summer-house, and drives them home again with the same."

In Strathspey they make on the 1st of May a hoop with the wood of this tree, and in the evening and morning cause the sheep and lambs to pass through it. The progress of education has in a great measure put an end to these superstitions; but in the wildest part of the Grampians the old Mountain-ash is still regarded with reverential feelings by the mountaineers. Some stanzas of a very old song speak of the supposed power of this venerated tree against witchcraft:—

"The spells were vain; the boys return'd
To the queen in sorrowful mood,
Crying that 'witches have no power
Where there is roan-tree wood.'"

The last line of this stanza is thought to throw some light on a line in Shakespeare's tragedy of "Macbeth," where the witch is relating her adventure with the sailor's wife:—

"A sailor's wife had chesnuts in her lap,
And mounched, and mounched, and mounched.
Give me, quoth I.
Aroint thee, witch, the rump-fed ronyon cries."

It is thought that the true reading should be "A *rown* tree witch," the accepted version being a corruption. Bishop Heber mentions in his *Journal* that in India he found a tree very similar in form and shape to the Mountain-ash, regarded with the same superstitious reverence, and used as a preservative against magic.

The Mountain-ash is the tree for exposed and open situations; it loves free air and plenty of water; and few trees suffer so much from drought and heat, and but few do so well in plantations intended to resist a sharp wind or the sea breeze.

SPECIES IV.—*PYRUS DOMESTICA*. *Sm.*

PLATE CCCCLXXXVII.

Sorbus domestica, *Linn. Sp. Plant.* p. 684.

Leaves pinnate, with 7 to 9 pairs of oblong acutely-serrated leaflets, and an odd terminal one, thinly flocculent-felted and grey beneath when young, sub-glabrous when old. Flowers in a corymbo-paniculate cyme. Calyx-segments applied to the petals in flower, inflexed when in fruit. Styles 5, entirely woolly. Fruit large, turbinate, dull red, speckled, 5-celled.

In woods. The only instance of its occurrence in this country is that of a single tree in Wire Forest, on the borders of Worcestershire, no doubt not truly native. It has also been reported from Cornwall, but on old and unconfirmed authority.

[England.] Tree. Early Summer.

Very like the mountain-ash, but with the young leaves more floccose-felted below, the serratures of the leaflets with the outer edge straighter, the lateral branches of the inflorescence shorter, so that it is rather a panicle than a corymb, the fruit resembling a small pear, 1 inch long and always with 5 cells.

Common Service-tree.

French, *Sorlier Domestique*. German, *Speierling*, *Spierapfel*.

The common name of this tree comes, according to Dr. Prior, from the word *cerevisia*, its fruit having in ancient times been used for making a fermented liquor—a kind of beer,—and he quotes Virgil as his authority. Evelyn tells us, in his "Sylva," that "ale and beer brewed with these berries, being ripe, is an incomparable drink." The *cerevisia* of the ancients was made from malt, and took its name, we are told by Isidore of Seville, from *Ceres*, *Cereris*. It is a tree of very slow growth, and, according to Kroker, does not come into bearing before it is sixty years old. The fruit is extremely austere when at all unripe, but when mellowed by frost and keeping, it becomes soft, brown, and eatable, somewhat like a medlar, though to most people less agreeable. The wood is very hard, and was held in repute for making mathematical rulers and excisemen's gauge-sticks until foreign woods of other kinds superseded it.

SUB-GENUS II.—EU-PYRUS. (PYRUS, *Linn.*)

Fruit rather large, sub-globose or turbinate, 5-celled; cells formed of tough parchment-like membrane, 2-seeded, or 1-seeded by abortion. Flowers in simple corymbose or umbellate cymes. Petals spreading. Styles 5, free or combined at the base.

SECTION I.—PYROPHYLLUM. *D. C.*

Styles free. Fruit turbinate or sub-globose, not umbilicate at the base.

SPECIES V.—PYRUS COMMUNIS. *Linn.*

PLATE CCCCLXXXVIII.

Leaves on rather long petioles, oval or roundish, acuminate, cuspidate, or obtuse and apiculate at the apex, finely serrate or crenate-serrate on the margins. Flowers in simple corymbose cymes. Styles distinct to the base. Fruit elongate- or roundish-turbinate, not umbilicate at the base.

SUB-SPECIES I.—*Pyrus Pyrastrer*. *Boreau*.

PLATE CCCCLXXXVIII. (principal figure).

Boreau, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 235.

P. communis Pyrastrer, *Linn.* Sp. Plant. p. 686.

Branches more or less spiny. Leaves oval or oblong-ovate, shortly acuminate or sub-cuspidate, pubescent beneath when young, glabrous when mature. Styles as long as the stamens. Fruit elongate-pyriform, inversely conical towards the base.

In woods, thickets, and hedges. Rare, and in many of its localities probably the produce of seeds of the garden pear accidentally dropped; most frequent in South of England, but extending as far North as Yorkshire and the Lake district. It has been said to occur at Clova, Forfarshire; but there is little doubt that it must have been introduced there, if not erroneously reported.

England, [Scotland], Ireland. Tree. Late Spring.

This form, if allowed to grow freely, is a tree 20 to 40 feet high, but when found in hedges is more frequently a shrub, not exceeding 6 or 8 feet, in both cases with some of the branches armed with spines. Leaves fasciculate on the spurs, but distant on the shoots of the year, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long when full-grown, at first pu-

bescent beneath on the veins and margins, but at length glabrous and shining, very finely serrate, with the serratures commonly blunt. Flowers rather few, entirely white, 1 to 1 $\frac{1}{4}$ inch across. Upper part of pedicels, calyx-tube, and segments woolly. Fruit tapering towards the base, 1 to 2 inches long.

SUB-SPECIES II.—*Pyrus Achras*. "*Gärt.*"(1), *Boreau*.

PLATE CCCCLXXXVIII. (separate flower and fruit).

Boreau, Fl. du Centre de la Fr. ed. iii. Vol. II. p. 235.

Branches more or less spiny. Leaves oval or roundish-oval, acute or abruptly acuminate, greyish flocculent when young, on both sides, and remaining slightly pubescent beneath when mature. Styles about as long as the stamens. Fruit globular-pyriform, rounded at the base.

In woods, thickets, and hedges. Apparently much more rare than *P. Pyrastrer*. The unpublished figure among the drawings for English botany in the British Museum is from an Essex specimen, but it is not unlikely to have been overlooked in other places. *P. Pyrastrer* also occurs in Essex, from whence it has been sent me by Mr. Varenne.

England. Tree. Late Spring.

This has the leaves more downy than *P. Pyrastrer* and never becoming completely glabrous beneath. The pedicels and calyx-tube are more woolly, and the fruit sub-globular, about 1 inch long.

Wallroth reverses the names *Pyrastrer* and *Achras*, as applied to the two forms of wild pears by Professor Boreau.

Wild Pear.

French, *Poirier Commun*. German, *Gemeiner Birnbaum*.

The fruit of the Pear in a wild state is scarcely eatable, being very harsh and acrid, and very small. The trees attain a very great age. M. Bose says that he has seen trees that were considered to be four hundred years old; and Mr. Knight observes: "The period at which the Teinton squash pear first sprang from seed cannot now be at all ascertained, but I suspect that it existed as early as the sixteenth century, and the identical trees which supplied the inhabitants of Herefordshire in the seventeenth century with liquor are likely to do the same good to those of the nineteenth. The Pear is mentioned by the earliest writers as common in Syria, Egypt, and Greece, from which country it appears to have been brought into Italy. Theophrastus speaks of the productiveness of some old Pear-trees, and Virgil mentions some Pears he received from Cato. The earliest notice of the Pear-tree extant is probably that of Homer, who, in the description he gives of the meeting between Laertes and Ulysses, mentions it as one of the trees growing in the garden of the old king. The Romans cultivated thirty-six sorts. Possibly they introduced it into our island, and our Pear-trees may only be

descendants of the fruit-trees planted around the Roman villas ; but it is more likely that the monks were its first cultivators here ; and we still find gigantic Pear-trees standing on the sites of old monastic gardens and around the ruins of abbeys and monasteries. The Pear is mentioned by Chaucer, and in the time of Henry VIII. it appears that the "Warden Pear" (so called from its property of keeping) was in cultivation. Gerarde enumerates seven sorts of what he calls "tame pears," and says, "those most rare and good are growing in the garden of Master Richard Pointer, a most cunning and curious grafter and planter of all manner of rare fruits, dwelling in a small village neere London called Twickenham ; and also in the ground of an excellent grafter and painfull planter, Mr. Henry Banbury, of Touthill Street, neere Westminster ; and likewise in the ground of a diligent and most affectionate lover of plants, Mr. Warner, neere Horseydowne, by London ; and in divers other grounds about London." To this is added, in 1596 : "Most of the best peares are at this day to be had with Mr. John Miller, in Old Street, in whose nursery are to be found the choicest fruits this kingdome yields." With regard to the great variety of Pears now in cultivation, we can but quote Gerarde's words, who in his day found it impossible to describe all that were then in use : what would he now have said to see any of our horticultural lists ? He observes : "To describe each apart were to send an owl to Athens, or to number those things that are without number." Turner, in 1573, in his list of fruits, mentions "peeres of all sorts." Parkinson enumerates sixty-four sorts ; Mortimer, in 1708, has many sorts ; and Miller has selected eighty sorts. The catalogue published by the Horticultural Society in 1835 contained 677 kinds, and it is from this list that most of our writers on horticulture quote ; still, we know that there are constantly additions made to the number of Pears in cultivation, and great improvements in their treatment.

The choice of Pears depends greatly on the purposes for which they are to be used, and gardeners select them accordingly. Worcestershire, Herefordshire, and Devonshire are the chief counties in England where Pears are grown. In the armorial bearings of Worcestershire we find three pears introduced, and we believe the perry made in that county excels any other save that produced in France and the Channel Islands. We find in Don's "Gardener's Dictionary" the following directions as to the choice of Pears :—"Dessert Pears are characterized by a sugary aromatic juice, with the pulp soft and subliquid or melting, as in the Beurres or Butter Pears. Kitchen Pears should be of large size, with the flesh firm, neither breaking nor melting, and rather austere than sweet, as the Wardens. Perry Pears may be either large or small, but the more austere the taste the better will be the liquor. Excellent perry was made from the Wild Pear."

The great use of the Pear-tree is for its fruit ; but it is by no means an unpicturesque tree in a landscape ; and in the spring, when covered with its white blossoms, we can seldom see a prettier sight. It would be well to remember that with the very same trouble and expense that is often employed to produce inferior kinds of Pears, might be grown the very best sorts, and that the quality of the timber and the effect in a landscape is as good in a tree yielding a fine-flavoured juicy fruit as in one that produces fruit which is dry, hard, and gritty. Not only are Pears used in their natural state as a dessert fruit, but they are equally good when stewed or preserved. In France and Belgium the fruit is very generally dried in ovens, in which state it forms an article of commerce, and will keep good for a year. In France they are prepared in two ways, —either simply dried in an oven, or preserved as we see them in boxes in the grocers' shops. This latter mode of preparation consists in gathering them before they are quite ripe, care being taken to preserve the stalk. They are then parboiled in very

little water, peeled and placed on dishes with the stalks uppermost. In this state a kind of syrup runs from them, which must be carefully poured out and set on one side; they are then placed on frames in an oven, and left there for twelve hours, from which they are removed and steeped in the syrup sweetened with sugar and brandy: this process is repeated four times, and they are then left to dry, and if properly done will be of a clear pale-brown colour, with fine half-transparent flesh. They are then arranged in boxes, garnished with white paper, and offered for sale. They will remain good for three years, but are considered best the first year.

The mode of making perry is precisely the same as for making cider, which is described under the Apple. The Pears should be gathered before they begin to fall, and they should be ground as soon as possible, to prevent the slight taste of decomposition which is often observable in perry unless very carefully made. Every Pear-tree, when fully grown and in good soil, will produce about twenty gallons of perry a year, and some in Herefordshire have yielded a hogshead in one season. Pears were considered by the Romans to be an antidote to poisonous mushrooms, and we believe that nothing is better than a draught of perry after an imprudent feast of that vegetable. Both pears and apples contain an acid known to the chemist as malic acid; it is also present in large quantities in the berries of the mountain-ash. This acid is used largely in calico-printing operations, especially where a white figure is required on a black ground: it is employed to discharge the black colour, which it does without injuring the cloth. Recently it has been found that apples and pears contain so much of this malic acid as to make them valuable chemical agents, and it is feared by the lovers of cider and perry that the price given for them for this purpose may diminish the quantity of these favourite beverages.

With regard to the practical cultivation of the Pear-tree, we are told that a dry deep loam is the best soil for it. Gravel is a good subsoil where the incumbent mould is suitable. For wall trees the soil should be made good to the depth of two or three feet; for orchard trees eighteen inches may do. Pear-trees on their own stocks will thrive on soil where apples will not even live, supposing the plants to be hardy varieties, little removed from wild pears, and to have room to grow freely as standards. Mr. Knight's mode of training a Pear-tree is as follows:—

"A young pear stock, which had two lateral branches upon each side, and was about six feet high, was planted against a wall early in the spring of 1810, and it was grafted in each of its lateral branches, two of which sprang out of the stem about four feet from the ground, and others at the summit in the following year. The shoots these grafts produced were about a foot long, were trained downwards, the undermost nearly perpendicular, and the uppermost just below the horizontal line, placing them at such distances that the leaves of one shoot did not at all shade those of another. In the next year the same mode of training was continued, and the year following I obtained an abundant crop of fruit."

The wood of the Pear-tree is heavy, strong, compact, and of a fine grain slightly tinged with red. It is readily stained black, and then so closely resembles ebony as scarcely to be distinguishable from it. It is a good wood for many purposes in the arts, and is an excellent fuel.

The oldest Pear-trees in the neighbourhood of London are at Twickenham, where they may be seen from fifty to sixty feet high, and with trunks from eighteen inches to three feet in diameter, and in all probability came from the nursery of Master Richard Pointer, Gerard's "curious and cunning grafter." In Herefordshire there stood in the year 1805 a tree which more than once filled fifteen hogsheads of perry in the same

year. It covered an acre of ground, and would have extended much further had Nature been left to herself. It is said to have been in its greatest perfection about 1776, and in 1836 was still standing.

SECTION II.—MALUS. *Tournef.*

Styles combined at the base, fruit sub-globose, umbilicate at the base.

SPECIES VI.—PYRUS MALUS. *Linn.*

PLATES CCCCLXXXIX. CCCXC.

Leaves on short or moderately long petioles, oval or roundish-oval, generally acuminate or cuspidate, rather finely and unequally serrate or crenate-serrate. Flowers in simple umbels. Styles united at the base. Fruit sub-globose, umbilicate at the base.

SUB-SPECIES I.—*Pyrus acerba*. *D. C.*

PLATE CCCCLXXXIX.

Gr. & Godr. Fl. de Fr. Vol. I. p. 572.

Malus acerba, "*Merat*." *Boreau*, Fl. du Centre de la Fr. ed. iii. p. 236.

P. Malus, var. *a*, *acerba*, *Bab. Man. Brit. Bot.* ed. v. p. 117.

P. Malus, var. *a*, *sylvestris*, *Leighton*, Fl. Shrop. p. 527.

P. Malus, var. *a*, *glabra*, *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 261.

P. Malus, var. *a*, *acida*, *Wallr.* Sched. Crit. p. 215.

Young branches glabrous or finely pubescent. Leaves pubescent on the veins when young, glabrous when old. Pedicels elongated, slightly pubescent towards the summit. Calyx-tube sub-glabrous. Fruit drooping, about as long as, or shorter than, its pedicel.

In woods, thickets, and hedges. Not unfrequent, and generally distributed, in the South and midland counties of England. I have never seen it in Scotland.

England, Scotland? Ireland? Tree. Early Summer.

A small tree, or more frequently a large shrub. Leaves 1 to 2 inches long when mature, oval or roundish-oval, abruptly acuminate or very shortly cuspidate at the apex, only slightly downy when young and becoming quite glabrous even beneath. Flowers rather few, $1\frac{1}{2}$ inch across, white within, red on the outside. Calyx-segments woolly only on the inside. Fruit $\frac{3}{4}$ to 1 inch in diameter, yellowish when ripe, with a depression at the base into which the peduncle is inserted.

Common Crab-apple.

French, *Poirier Acerbe*.

As a picturesque tree, this is perhaps one of the most beautiful, and whether in flower or fruit is equally pleasing to the eye. The pretty red fruit is so exceedingly

acid and harsh, that it cannot be eaten in an uncooked state, but makes a very pleasant preserve when boiled with sugar. The French commonly call the apples Cider Apples, and the juice known as "verjuice" has given rise to a proverb from its acidity, and is a favourite remedy in rural districts for sprains and bruises. In Ireland, the juice is often added to cider to give it roughness.

SUB-SPECIES II.—*Pyrus mitis*.

PLATE CCCCXC.

P. Malus, var. β , *mitis*, *Wallr. Sched. Crit.* p. 215.

P. Malus, *D. C. Gr. & Godr. Fl. de Fr. Vol. I.* p. 571.

Malus communis, "*Poir.*" *Boreau, Fl. du Centre de la Fr. ed. iii.* p. 236.

P. Malus, var. β , *tomentosa*, *Bab. Man. Brit. Bot. ed. v.* p. 117. *Koch, Syn. Fl. Germ. et Helv. ed. ii.* p. 261.

P. Malus, var. β , *sativa*, *Leighton, Fl. Shrop.* p. 527.

Young branches, underside of leaves, pedicels, and calyx-tube, woolly, pubescent. Fruit sub-erect, longer than the peduncle.

In hedges and thickets. Not uncommon in England and the South of Scotland, but most probably generally, if not always, derived from the seeds of the cultivated apple.

England, [Scotland], Ireland? Tree. Summer.

This plant is, no doubt, the original stock of all the cultivated apples which have shortly-stalked fruit. The leaves are generally larger, more oval, and with rather shorter petioles and less distinctly cuspidate than those of the crab-apple; the red and white in the flower is more in stripes, and the whole plant more woolly. It begins to flower a little earlier than *P. acerba*, and appears to perfect its fruit less readily, as I have frequently seen the crab fruiting freely beside *P. mitis* on which no fruit was set.

The name *tomentosa* cannot be applied to this plant, as there is already a *P. tomentosa* of De Candolle.

Wild Apple.

French, *Pyrus Pommier*. German, *Gemenier Apfelbaum*.

The source from whence we derived our first cultivated Apples is somewhat obscure; but it is certain that no fruit is brought to so great a state of perfection at the present time in Great Britain, and with so little trouble, the climate and soil seeming to be specially adapted to it. The Apple is mentioned by the most ancient Greek writers, and in Pliny's time it was cultivated in abundance in the villages around Rome, and many of the sorts took their names from the first grafters. In all probability, the cultivated Apple was first introduced into our island by the Romans,—possibly by some of the monks who established themselves here, and founded religious houses, the gardens of which were well supplied with fruit-trees. The Apple known as the pippin, from being originally raised from pips or seeds instead of by grafting, was brought by Leonard Maschal, in the sixteenth year of the reign of Henry VIII., from France; and numerous other varieties were imported shortly after. In Shakespeare's time Apples of this sort seem to have been much esteemed, if we may judge

from Justice Shallow's invitation to Falstaff :—" You shall see mine orchard, where in an arbour we will eat a last year's pippin of my own grafting." The practice of grafting, or grafting as it is called, is of very ancient origin, and is now constantly used as a method of perpetuating the varieties originally obtained from seed. A notion was formerly entertained that the grafts would only last as long as the parent tree ; but there seems no reason to doubt that if the operation of grafting be properly performed, the graft may be as durable as a tree raised from seed, and the kind perpetuated indefinitely. The best Apples in Gerard's time were the queening-pearmain, the paradise, and some other sorts. He tells us that " Kent doth abound with Apples of most sorts," and adds : " But I have seen in the pastures and hedgerows about the grounds of a worshipfull gentleman dwelling two miles from Hereford, called Master Roger Bodnome, so many trees of all sorts, that the servants drinke for the most part no other drinke but that which is made of Apples. The quantity is such, that by the report of the gentleman himselfe, the parson hath for tithe many hogsheads of syder. The hogs are fed with the fallings of them, which are so many, that they make choice of those apples they do eate, who will not taste of any but of the best ; an example, doubtless, to be followed of gentlemen that have land and living : but envie saith, the poore will breake down our hedges, and we shall have the least part of the fruit ; but forward in the name of God,—graffe, set, plant, and nourish up trees in every corner of your ground ; the labour is small, the cost is nothing, the commodity your selves shall have plenty, the poore shall have somewhat, in time of want, to relieve their necessity, and God shall reward your good minds and diligence."

Herefordshire and Worcestershire are the counties in England where the most Apples are grown, and in the early spring the white blossoms of the trees form a distinctive feature in the landscape, as the ripe and ruddy fruit amidst the green leaves does in the autumn. Some of the oldest Apple-trees in existence are to be found in Herefordshire, and the number of varieties there cultivated are numerous ; but in the catalogue of Apples published by the Horticultural Society of London we find 1,400 different sorts enumerated and described ; and this list is increased every year.

The wood of the Apple is hard and tough, and well fitted for the use of the turner : that of the Wild Apple is superior to the cultivated variety. The uses of the Apple as an eatable fruit are very numerous. Apples are equally good cooked and in a raw state, and may be easily preserved in the form of jelly, and also by a process which is carried on chiefly in Norfolk, of drying them slowly in bakers' ovens and then pressing them flat till they are perfectly soft and of a rich brown colour. Apples so prepared will keep for many months, and are sold under the name of " biflins," really *beau fins*. The chief commercial value of Apples is in the manufacture of cider, which is carried on extensively in Herefordshire, Worcestershire, and Devonshire. In the two former counties large orchards of Apple-trees cover many acres of ground, especially with a view to this beverage. The fruit is allowed to remain on the trees until perfectly ripe. It is then gathered and placed in a crushing-mill, and the juice expressed by a very heavy roller. This is allowed to ferment ; and it is in the careful attention to this process that the excellence of the cider consists. The usual produce of an Apple-tree is from one to two hogsheads of fruit, which will, under the most favourable circumstances, yield one hogshead of cider ; but more commonly it requires three trees to produce two hogsheads. Upon an average, about twenty-six to thirty bushels of Apples yield a hogshead of cider, and a single acre of good orchard-land will sometimes furnish from five to six hundred bushels of fruit ; but the produce varies greatly, as the blossom of the Apple, like that of most of our fruit-trees, is likely to be injured by the late

spring frosts and dry winds. The Devonshire cider differs from that of Worcestershire and Herefordshire in being sweeter, weaker, and not so likely to keep good.

The Apple-tree sometimes attains a considerable age ; several now exist in this country which must be above two centuries old ; and one is still standing at Horton, in Buckinghamshire, which is said to have been a large tree in the time of Milton, who, in his boyhood, sat under its shade. Gerard tells us that the use of Apples in an ointment made of "swine's grease and rose-water, for the purpose of beautifying the face and take away roughness of the skin, gave rise to the name *pomatum*, because of the apples whereof it is made."

The Apple-tree flourishes best on hill-sides with a southern aspect, and prefers a rich deep soil ; but it will grow in almost any situation but in bog or loose sand. Stagnant water is very injurious to it, and an orchard should always be well drained. Since the latter end of the last century the Apple-trees have been injured by the attacks of an aphid, which often covers the branches with a cotton-like exudation, and occasions a diseased growth, which is often destructive to the tree. In order to get rid of these troublesome creatures, there is no way but cleaning them off with a brush and water or lime-water, and even to amputate the branches when they have been some time at work. Other remedies are suggested and employed by gardeners, but they require care and skill in the application, lest the structure of the tree be injured. We find a mixture of sulphuric acid and water recommended with which to wash the tree, also a mixture of vegetable tar and corrosive sublimate to be smeared on the trees, and train-oil is by some thought to be a good application. Much of the success, however, attendant on the use of any composition depends on its being carefully and thoroughly applied. We rather think frequent and careful applications of a stiff brush and simple water is as effectual as any other remedy. In order to store Apples well in a fruit-room, it must be remembered that there must be plenty of ventilation, and, if possible, a fireplace ; and the fruit should be laid apart on shelves one above the other, made of open or lattice-work, if the fruit is desired to keep well and for some time.

The Apple-tree seems to be associated with our very earliest notions of a garden and the fall of man, and is not only thus interwoven with our earliest religious impressions, but it is also the tree which is distinguished by legends in the mythology of the Greeks, Scandinavians, and Druids. The golden fruit of the Hesperides was an apple ; and it was the apple of discord which caused so much calamity to the fair goddesses amongst whom it was thrown. The Druids paid particular reverence to the Apple-tree, because the mistletoe was supposed to grow only on it and the oak. Hercules was worshipped by the Thebans under the name of Melius, and apples were offered at his altars. Even in recent times, the custom of christening or saluting Apple-trees exists in some parts of the country on Christmas-eve. The farmer and his men proceed to the orchard, bearing a bowl of cider with a toast in it ; they pour the cider about the roots of the trees, and place the toast on its branches. Having offered their oblation, they sing somewhat in the following words :—

"Here's to thee, old Apple-tree
 Whence thou mayst bud and whence thou mayst blow ;
 And whence thou mayst bear apples enow.
 Hats full ! caps full !
 Bushel, bushel, sacks full !
 And my pockets full too !

Huzza ! !"

This is sometimes done on Twelfth Night as well as on Christmas-eve. The ceremony differs somewhat in different districts, occasionally having the addition of numerous little fires being lighted on the orchard-ground during the performance. The Wassail-bowl of our ancestors, which formed a part of all their festivals, was composed of ale, sugar, nutmeg, and roasted apples, which every person partook of, each one taking an apple out of the bowl and drinking the liquor. Sometimes the roasted apples were bruised and mixed with milk or white wine instead of ale. The custom of putting roasted apples into ale is recognized by Shakespeare, where Puck is describing his feats :—

“ Sometimes I lurk in a gossip’s bowl,
In very likeness of a roasted crab ;
And when she drinks, against her lips I bob,
And on her wither’d dewlap pour the ale.”

The custom of bobbing for apples on All-Hallow E’en and on All Saints’ Day was once common in England, and is now practised in some parts of Ireland, and exists in modified forms in Scotland and in various counties in England. Poets have sung the praises of the Apple-tree, and we cannot help quoting a few lines from Philips and from Thomson, the lover of nature in her various garbs :—

“ The pippin burnish’d o’er with gold ; the moyle
Of sweetest honied taste ; the fair pearmain,
Temper’d, like comeliest nymph, with white and red.”

Of Apple-gathering Thomson says :—

“ The fragrant stores, the wide projected heaps
Of Apples, which the lusty-handed year
Innumerable o’er the blushing orchard shakes,
A various spirit, fresh, delicious, keen,
Dwells in their gelid pores ; and active points
The piercing cider for the thirsty tongue.”

Philips, in 1706, published a poem in praise of the “ Herefordian plant,” as he calls it, and speaks of

“ John Apple, whose withered rind intrencht
With many a furrow, aptly represents decrepid age.”

A description which accounts for Falstaff’s anger at the sight of the fruit : “ Thou know’st Sir John cannot endure an Apple John. The Prince once set a dish of Apple Johns before him, and told him there were five more Sir Johns, and putting off his hat said, *I will now take my leave of these six dry, round, old withered knights.* It angered him to the heart.”

The acid produced by the Apple is the same as that of the Pear, and is of the same chemical value. Lately, the quantity of cider made in some districts has diminished, owing to the fact of whole orchards of Apples being purchased for manufacturing and dyeing purposes.

The Wild Apple-tree is the badge of the Highland clan Lamont.

*EXCLUDED SPECIES.***SANGUISORBA MEDIA.** *Linn.*

Said to have been found by Mr. George Don in the West of Scotland; but doubtless erroneously, as it is an American plant not occurring at all in Europe.

AREMONIA AGRIMONOIDES. *D. C.*

A plant of South-eastern Europe, found by Mr. John Sim in woods at Scone, and in several parts of Perthshire; an escape from gardens, and, not having been noticed before 1856, no doubt a very recent one; so that it can scarcely yet claim a place amongst naturalized plants.

POTENTILLA ALBA. *Linn.*

E. B. No. 1384.

Said to have been found in Wales; but this has not been verified by recent observation. Probably *P. Fragariastrum* was mistaken for it.

POTENTILLA INTERMEDIA. *Nest.*

P. opaca, *Sm.* E. B. No. 2449.

Said to have been found by Mr. G. Don on the hills of Clova and braes of Balquidder, and seashore opposite Dundee, but not found by any other botanist, and his authority alone is not sufficient to establish its occurrence.

POTENTILLA TRIDENTATA. *Sm.*

E. B. No. 2389.

Said to have been found by Mr. G. Don on Werron Hill and East Rocks Loch, Brandy Clova; but no doubt *Sibbaldia procumbens* has been mistaken for this American plant.

RUBUS ARTICUS. *Linn.*

E. B. No. 1585.

Said to have been found on Ben-More, in the Isle of Mull, and on Ben-y-Gloe, Perthshire; but recent search has failed to discover it. Mr. Watson had a specimen sent him which was said to have been gathered on a moor in Yorkshire, but he had reason to believe that the specimen was of garden origin. It appeared in the garden

of the late Mr. J. Irvine Boswell, Kingcausie, near Aberdeen, on a bank of peat mould brought from the neighbourhood in preparation for a rhododendron bed; but careful search failed to detect it growing on the spot whence the mould was brought, and after a few years the plant died out in the garden. It is not an unlikely plant to occur; the most probable place for it is the district near the Sow of Atholl, where the *Menziesia cærulea* is found.

RUBUS TOMENTOSUS. *Borkhaus.*

A plant found at Horseton Hill, near Harrow, Middlesex, has been supposed to be a variety of this plant; Professor Babington, however, considers it is not that plant, but probably *R. leucostachys*.

ROSA CINNAMOMIA.

E. B. No. 2388.

Said to have been found in the wood at Aketon, near Pontefract Castle, and at Birk Hill, Galston, Ayrshire; no doubt escaped from cultivation.

ROSA DICKSONI. *Lindley.*

E. B. S. No. 2707.

Said to have been found in Ireland by Mr. James Drummond, but probably not native.

ROSA LUCIDA. *Ehrh.*

Mr. Borrer found this American plant near Keswick, where it had been mistaken for *R. cinnamomia*.

ROSA POMIFERA. *Hern.*

Found at Coates Heath, Staffordshire, by the Rev. R. C. Douglas; but probably escaped from a garden, as it is not unfrequently cultivated.

PYRUS SEMIPINNATA. *Roth.*

Pyrus pinnatifida, *Ehrh.* ? *Smith*, E. B. No. 2331.

The figure in English Botany appears to represent a plant which is commonly cultivated in gardens and ornamental plantations. I have received it from M. Huguenin, of Chambéry, under the name of *Sorbus hybrida*. It seems to be quite distinct from the Scandinavian and Arran plant named *Sorbus fennica* by Fries, but has no claims to be considered as indigenous in Britain.

I am unable to discover whether the *P. pinnatifida* of Ehrhart belongs to this or to *P. fennica*, though it is probably to the former, as I have seen none but Scandinavian specimens of the latter.

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ENGLISH BOTANY.

ILLUSTRATIONS.



E.B. 742.

Ulex Europæus Common Furze.



E. B. S. 2987.

Ulex Gallii. Planchon's Furze.







E. B. 208.

Genista pilosa. Hairy Green-Weed.





E.B. 1329

Sarcobatus scoparius. Common Broom.



E. B. 682.

Ononis campestris. Upright Rest-harrow.



E. B. S. 2659.

Ononis arvensis.

Procumbent Rest-harrow.



E. B. S. 2838.

Ononis reclinata. Small Spreading Rest-harrow.



E. B. 104.

Anthyllis Vulneraria.

Common Kidney Vetch.



Medicago sativa. Common Lucerne.

*Medicago sylvestris.*

Fries' Lucerne.



E.B. 1016.

Medicago eu-falcata.

Yellow Lucerne.



Medicago lupulina. Black Medick.



E.B. 1516

Medicago maculata. Spotted Medick.





Medicago minima. Little Bar Medick.



E. B. 1340.

Melilotus officinalis.

Common Melilot.



E. B. S. 2689.

Melilotus alba. White Melilot.



E. B. S. 2960.

Melilotus arvensis.

Field Melilot.

*Melilotus parviflora.*

Small-flowered Melilot.





E. B. 1648

Trifolium subterraneum.

Subterranean Trefoil.



1770.

Trifolium pratense. Red Clover.



E. B. 190.

Trifolium medium. Zigzag Trefoil.



E. B. 1224.

Trifolium ochroleucum.

Sulphur-coloured Trefoil.



Trifolium maritimum. . Teasel-headed Trefoil.



E.B. 1545.

Trifolium stellatum. Starry-headed Trefoil.

*Trifolium eu-incarnatum.*

Crimson Clover.



E. B. S. 2950.

Trifolium Molinerii.

Balbi's Trefoil.







E. B. 1843.

Trifolium striatum. Soft Knotted Trefoil.



Trifolium securum. Rough Rigid Trefoil.



E.B. 1063.

Trifolium glomeratum. Smooth Round-headed Trefoil.



E. B. 1049.

Trifolium suffocatum.

Dense-flowered Trefoil.



E. B. S. 2942.

Trifolium strictum.

Upright Round-headed Trefoil.

*Trifolium hybridum.*

Alsike Clover.



E. B. 1769.

Trifolium repens. White Clover.

*E. B.* 1050.

Trifolium fragiferum. Strawberry-headed Trefoil.



E. B. S. 2789.

Trifolium resupinatum.

Reversed-flowered Trefoil.



Trifolium procumbens. Hop Trefoil.



Trifolium minus. Lesser Yellow Trefoil.





E. B. 2090.

Lotus eu-corniculatus. Common Bird's-foot Trefoil.





E. B. 2091.

Lotus major. Marsh Bird's-foot Trefoil.



E. B. 925.

Lotus diffusus. Long-podded Small Bird's-foot Trefoil.



E.B.S. 2823.

Lotus hispidus. Short-podded Small Bird's-foot Trefoil.



E.B. 466.

Oxytropis Halleri.

Blue *Oxytropis*.



B. 2522.

*Oxytropis campestris.*Pale-yellow *Oxytropis*.





E.B.S. 2717.

Astragalus alpinus.

Alpine Milk-Vetch.



E.B. 274.

Astragalus hypoglottis.

Purple Milk-Vetch.



F. B. 203.

Astragalus glycyphyllos. Sweet Milk-Vetch.



E. B. 369.

Ornithopus perpusillus.

Least Bird's-Foot.



Ornithopus bracteatus. Sand Bird's Foot.







L.B. 970.

Vicia hirsuta. Hairy Tare.



B. 1223.

Vicia tetrasperma.

Four-seeded Slender Tare.



B. S. 2904.

Vicia gracilis. Many-seeded Slender Tare.



E. B. 1163.

Vicia Cracca. Tufted Vetch.



B. 518.

Vicia Orobus. Wood Bitter Vetch.



E. B. 79.

Vicia sylvatica. Wood Vetch.



E. B. 1515.

Vicia sepium. Bush Vetch.



E. B. 481.

Vicia eu-lutea Rough-podded Yellow Vetch.



E. B. 483.

Vicia levigata. Smooth-podded Sea Vetch.



E. B. 482.

Vicia hybrida. Hairy-flowered Vetch.



Vicia eu-sativa. Common Cultivated Vetch.



E. B. 2614.

Vicia angustifolia, var. *a segetalis*.

Common Wild Vetch, var. *a*.



E. B. 2708.

Vicia angustifolia, var. β Bobartii.

Common Wild Vetch, var. β .



E. B. 30.

Vicia lathyroides. Spring Vetch.



E. B. 1842.

Vicia Bithynica.

Bithynian Vetch.



Lathyrus Aphaca. Yellow Vetchling.





E. B. 1255.

Lathyrus hirsutus. Hairy Vetchling.



E.B. 670.

Lathyrus pratensis.

Meadow Vetchling.

*Lathyrus tuberosus.*

Tuberous Vetchling.



E. B. 805

Lathyrus sylvestris. Narrow-leaved Everlasting Pea.



E. B. 1108.

Lathyrus latifolius

Broad-leaved Everlasting Pea.



N. B. 169.

Lathyrus palustris.

Marsh Vetchling.



E. B. 1046.

Lathyrus maritimus. Sea Pea.

*Lathyrus macrorrhizus.*

Tuberous Bitter Vetch.



E. B. 2788.

Lathyrus niger. Black Bitter Vetch.



Prunus spinosa. Black-thorn.



E. B. 841.

Prunus insititia. Bullace



E. B. 1783.

Prunus domestica. Wild Plum.







E. B. 1383.

Prunus Padus. Bird Cherry.





F. B. 960.

Spiraea Ulmaria. Meadow-sweet.



E. B. 284.

Spiraea Filipendula. Dropwort.



E. B. 1335.

Agrimonia Eupatoria. Common Agrimony.



E. B. S. 2982.

Agrimonia odorata. . Fragrant Agrimony.



E. B. 860.

Poterium Sanguisorba. Common Salad Burnet.



E. B. S.

Poterium muricatum.

Muricated Salad Burnet.



E. B. 1312.

Sanguisorba officinalis. Great Burnet



E. B. 1011.

Alchemilla arvensis.

Parsley-Piert.



E. B. 597.

Alchemilla vulgaris.

Common Lady's-Mantle.



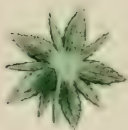
E. B. S. 2983.

Alchemilla conjuncta.

Silvery Lady's-Mantle.

*Alchemilla alpina.*

Alpine Lady's Mantle.





E. B. 1785.

Potentilla Fragariastrum. Barren Strawberry.



*Potentilla alpestris.*

Yellow Alpine Cinquefoil.



E. B. 863.

Potentilla cu-Tormentilla.

Common Tormentil.



Potentilla procumbens. Creeping Tormentil.





E. B. 861.

Potentilla anserina. Silver-weed



E. B. 2058.

Potentilla rupestris.

Strawberry-flowered Cinquefoil.



*Potentilla fruticosa.*

Shrubby Cinquefoil.



E. B. 172.

Potentilla Comarum. Marsh Cinquefoil.



E. B. 1524.

Fragaria vesca. Wild Strawberry.



F. R. 2197.

Fragaria elatior.

Hautbois Strawberry.





E. B. 2233.

Rubus saxatilis.

Stone Bramble.



E. B. 2442.

Rubus Idæus. Raspberry.





E. B. 2572.

Rubus suberectus. Suberect Bramble.



E. B. S. 2714.

Rubus plicatus. Plaited-leaved Bramble.



E. B. S. 2604.

Rubus rhamniifolius

Buckthorn-leaved Bramble.





E.B.S. 2631.

Rubus leucostachys.

Long-clustered Bramble.



E. B. S. 2664.

Rubus Grabowskii.

Grabowski's Bramble.



E. B. S. 2625.

Rubus macrophyllus. Large-leaved Bramble.



Rubus mucronulatus. Cuspidate-leaved Bramble.



Rubus Radula.

File-stemmed Bramble.



E. B. S. 2605.

Rubus Köhleri. Köhler's Bramble.





E. B. 827.

Rubus corylifolius. Hazel-leaved Bramble.

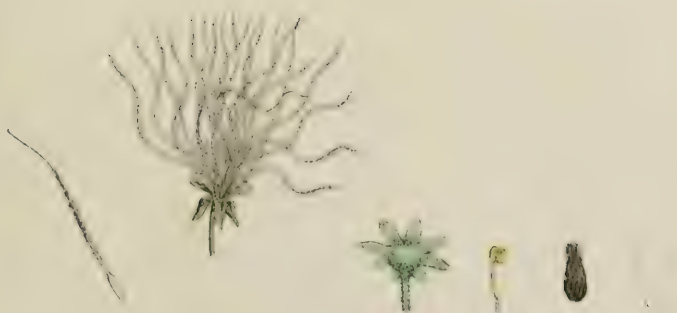




*Geum intermedium.*

Intermediate Avens.





B. B. 451.

Dryas octopetala.

Mountain Avens.









E. B. S. 2723.

Rosa Wilsoni.

Wilson's Rose.



2601

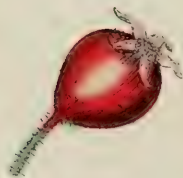
Rosa Sabini. Sabine's Rose.



E. B. 2459.

Rose mollissima. Soft-leaved Rose.





E. B. 991.

Rosa rubiginosa.

Common Sweet-briar.





E. B. 2490.

Rosa micrantha.

Small-flowered Sweet-briar.





E. B. 2579.

Rosa Borreri. Scentless Briar



Rosa coriifolia. Leathery-leaved Briar.



Rosa Bakeri. Baker's Briar.



E. B. 2367.

Rosa Ctesia.

Glaucous-leaved Dog-Rose.









F. B. 1895.

Rosa systyla. Columnar-styled Dog-Rose.





E. B. S. 2713.

Cotoneaster vulgaris.

Common Cotoneaster.



Mespilus germanica.

Wild Medlar.

*Crataegus oxyacanthoides.*

Glabrous White-thorn.



E. B. 2504.

Crataegus monogyna.

Common White-thorn.





E. B. 1858.

Pyrus eu-Aria. Common White-beam.



Pyrus rupicola. Rock White-beam.

*Pyrus scandica.*

Lobed-leaved White-beam.



E. B. 2331.

Pyrus fennica.

Bastard Mountain-ash.







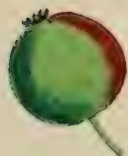
E. B. 1784

1. *Pyrus Pyraeaster**Pyrus communis*.

Wild Pear.

2. *Pyrus Achras*.





Pyrus initis

Wild Apple.

August, 1881.

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